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LIST OF ILLUSTRATIONS IN VOLUME XXXVII.

	PAGE
The Rise of the Seiene. The ferry-man from the National Bridge to the Bridge of Tolbiac.....	2
Administration Building of the Veterinary School, Alfort.....	3
On the "Berthon".....	3
Houses in Alfort; the principal thoroughfare.....	4
Roaring—	
Fig. 1—Right Half of Larynx of Horse.....	27
Fig. 2—Left Half of Larynx of Horse Immediately After Operation.....	31
Dog from which a 2-oz. Cystic Calculus was removed.....	56
Cystic Calculus from eighteen months' old Foxhound.....	57
Teratoid Developments in Testicles of Horses—	
Fig. 1.....	58
Fig. 2.....	59
Fig. 3.....	60
A Prolific Cow.....	62
Lip-and-Leg Ulceration (Necrobacillosis). Its Cause and Treatment—	
Fig. 1—Lip-and-Leg ulcerations, showing lip lesions in ewe infected with germs obtained from warty lips of lamb.....	163
Fig. 2—Lip-and-Leg ulcerations, showing leg lesions.....	165
Fig. 3— <i>Bacillus necrophorus</i> showing cocoid, bacillary and filamentous forms.....	166
Fig. 4—Development of colonies of <i>Bacillus necrophorus</i> in agar jelly. <i>a.</i> Culture showing twenty-four hours' growth, with numerous small gas bubbles; <i>b.</i> culture seven days old showing isolated colonies which are characteristic in that their grayish centers are surrounded by fuzzy white areas not unlike the strands of loose, fleecy cotton; <i>c.</i> single colonies of the necrosis bacillus showing this filamentous character of their growth (enlarged). (From drawing by W. S. D. Haines.).....	167
Fig. 5—Lamb with lesions on lips and sheath. (Photo by Dr. W. E. Howe.).....	171
Fig. 6—Head of hog affected with necrotic stomatitis due to the necrosis bacillus.....	320
Fig. 7—Lesions on the tongue, cheek and hard palate in calf diphtheria due to the necrosis bacillus.....	321
Fetal Testicle and its attachments, illustrating the attachments and relations of a typical cryptorchid testicle as affecting the problem of castration.....	174
Notes on Some Diseases of Ostriches—	
Fig. 1—Showing Ostrich affected with paralysis attempting to rise.....	292
Fig. 2—Ostrich chick affected with paralysis attempting to crawl about on its hocks. Note the contracted condition of the toes..	293

	PAGE
Fig. 3—Bird in last stage.....	294
Fig. 4—Showing position assumed by sick bird in last stages.....	294
Entrance to Administration Hall, Royal Veterinary College, Berlin....	341
At the Polyclinic.....	343
Waiting for the Professor.....	344
Narcotizing a Dog prior to the Operation.....	347
A Monstrosity.....	373
Group of U. S. V. M. A. Members, Philadelphia, 1904, Frontispiece to No. 4, Vol. XXXVII.	
Photograph of Dog Showing Typical Attitude.....	522
Officers of the American Veterinary Medical Association, 1909-1910, Frontispiece to No. 5, Vol. XXXVII.	
Showing pelvis of a rabbit whose Thymus Glands have been removed and the witness.....	574
Hermaphrodism in a Mule Colt.....	655
Cystic Testes with Secondary Cysts; Case Report.....	658
Peculiar Accident to Dog.....	780
Tenotomy in Both Posterior Members.....	782, 783

INDEX TO AUTHORS.

	PAGE		PAGE
Aghion, Jacques E.....	363	Melvin, A. D.....	38
Archibald, R. A.....	237, 379	Merillat, L. A..	381
Baker, Frank J.....	658	Milks, H. J.....	762
Bittick, S. G.....	524	Mohler, John R.....	154, 315
Bolser, F. A.....	217	Moore, Veranus A.....	328
Boor, O. L.....	214	Myers, H. E.....	368, 780
Burton, J.....	221	Nelson, A. F.....	219
Cary, C. A.....	23	Nelson, C. A.....	211
Cooke, A. B.....	783	Nelson, S. B.....	382
Cooley, A. S.....	381	Northrup, L. E.....	207
Dalrymple, W. H.....	349	O'Leary, John P.....	82, 257, 799
Darling, Samuel T.....	375	Oliver, John.....	657
De Vine, J. F.....	189, 581	Porter, Bennett.....	225
Downey, Chas. A.....	782	Reeds, R. H.....	655
Ebeling, W.....	746	Reichel, John.....	47
Fehse, Andreas.....	442	Rennicks, G. F.....	519
Ferry, N. S.....	499	Reynolds, M. H.....	299
Foster, J. P.....	621	Robbins, E. T.....	510
Giltner, Ward.....	756	Rogers, T. B.....	505
Glenberg, C. G.....	484	Rogers, Thomas B.....	771
Grenside, F. C.....	653	Schroeder, E. C.....	475
Harrison, R. H.....	492	Schwazkopf, Olaf.....	63
Hela, H. A.....	50	Shaw, John Balcom.....	515
Hitchens, A. Parker.....	597	Sigmond, C. J.....	223
Howatt, Wm. D.....	779	Sorensen, A. I.....	646
Hudson, Bentley F.....	373	Springer, C. W.....	56
Hughes, D. Arthur.....	230, 515	Stange, C. H.....	803
Hurt, L. M.....	713	States, Harry E.....	452
Jefferson, Joseph H.....	365	Steckel, L. M.....	339
Johnson, Ralph H.....	630	Steffen and Steffen.....	226
Kaupp, B. F.....	58	Stevens, C. C.....	60, 522
Kinsey, Geo. W.....	466	Stoule, R. A.....	656
Kinsley, A. T.....	521	Talbot, H. E.....	736
Kline, A. J.....	242	Ude, W. H.....	383
Knowles, A. D.....	240, 529	Unterhoessel, Dr.....	650
Krey, T. F.....	611	Van Es, L.....	200
Lellmann, Wilfred.....	746	Weston, E. A.....	370, 371, 373
Liautard, A.....	71, 75, 244, 249, 254, 385, 390, 395, 533, 539, 650, 663, 666, 787, 790, 796	White, George R.....	638
Lyman, A. P.....	525	Williams, W. L.....	173
Lyman, Richard P.....	242	Wilson, Matthew.....	356
Marchand, G. U.....	774	Yard, W. W.....	768
Martin, W. J.....	52		



TABLE OF CONTENTS, VOLUME XXXVII.

PAGE	PAGE
Abortion in Cattle.....	630
Abscess, Chronic, on the Mesen- tery with Fistula Opening into the Small Intestine.....	662
Abscesses of Fixation.....	8
Abscesses of Strangles with Per- foration in the Oesophagus...	541
Abscess, Mammary, in a Cow...	247
Abscess of Strangles in the Mediastinum Communicating with a Sub-Sternal Purulent Collection	795
Abstracts from Exchanges.....	71, 244, 385, 659, 787
Actinomycoses, Rare Localization of, in a Cow.....	254
Acquired Diaphragmatic Hernia in a Foal.....	86
Acute Enteritis.....	789
A Few of the Internal Parasites of the Horse and Sheep, Case Report	522
Alfort, Flood at.....	I
Allantoid, Dropsy of the not Diagnosed in a Cow.....	249
American Veterinary Special....	438
Amputations	247
Amputation of the Tongue, Case Report	370
Anaphyloxy, A Little About....	279
An Educational Problem.....	621
Angiocholitis, Suppurative As- cending Chronic in a Cat.....	394
Animal Diseases of Interest to the General Practitioner of Human Medicine	638
An Interesting Case.....	535
Anjeszky's Disease, Contribution to the Study of.....	83
Antidenitic Vaccination, Value of the.....	797
Anterior Crural Nerve, Paralysis of the	662
Antistreptococcic Serum in Pur- pura	396
Anus, Imperforated in a Calf....	74
Aphthous Fever, or Foot and Mouth Disease	452
Armatus, Strongylus.....	246
Army Personal Notes.....	64, 786
Army Veterinary Bill.....	19
Army Veterinary Bill, Status of the	785
Army Veterinary Bill, Endorse- ment of, by the Profession....	228
Army Veterinary Bill, No Pros- pect of Passage of the.....	63
Army Veterinary Bill Passes the Senate	65
Army Veterinary Department.....	63, 228, 785
Arthritis, Pyaemic, and the Use of Miclein Solution in Its Treatment, Case Report.....	365
Ascitis in Dog.....	265
Asinine Tuberculosis.....	703
Auricles, Ossified Cardiac in a Horse	539
Avian Diphtheria or "Roup"...	214
Avine Tuberculin as a Diagnostic Agent in Chronic Pseudo- tuberculous Enteritis of Cattle	261
A. V. M. A. Convention, Off to the	710
A. V. M. A. Matters.....	153
A. V. M. A., Past President of, Decorated by King George....	580
A Well-Employed Career.....	706
Axillary Artery, Thrombosis of the	796
Azoturia, Case of, Case Report..	221
Azoturia—Hemoglobinuria	697
Bacilli, Acid Fast, Concerning an Elective Staining of the Spores of	87
Back, Last Cervical Vertebrae and Front Ribs, Fracture of the	533
Bacterine and Vaccines in Vet- erinary Practice	505
Bakteriologie, Kompendium der Angewandten, fur Tierarzte...	708
Bandage, A Practical.....	650
Behring's Bovovaccination, Con- tribution to.....	746
Belgian Review.....	395, 666
Berlin, Veterinary College at....	339

	PAGE		PAGE
Bibliographical Items.....	18, 69, 149, 291, 436	Castration, Jaundice Following in the Horse.....	791
Bibliography	707	Castration, Prostatic Enlarge- ment Cured by.....	537
Bier's Method, Testing the Treat- ment by.....	77	Catalepsy in a Pony, Case Re- port	653
Bill, Army Veterinary.....	19	Catarrh, Malignant, Typical Case of	661
Biological Therapeutics in Vet- erinary Practice.....	611	Cat, Gastritis in a.....	659
Bitch, Ileo-Caecal Intussusception in a	787	Cattle, Abortion in.....	630
Blood, How Much Can Be Taken from a Horse.....	288	Cattle and Horses, Coccidiosis of	47
Bones, Three Cases of Surgery on	253	Cattle, Fractures in.....	245
Boric Acid, Crystallized, Thera- peutic Value of.....	80	Cerebro-spinal Meningitis.....	762
Bovine Tuberculosis in Iowa Herds	736	Cervical Myositis or Stiff Neck in a Dog.....	792
Boulanger, Francisco P., D. V. S.	531	Cervical Tuberculosis and Frac- ture of First Rib in a Mare...	73
Bronchitis, Chronic, of Horses..	567	Chicago Veterinary College, Twenty-seventh Annual Com- mencement of.....	559
Bulbaris Infectiosa, Paralysis, in the Dog.....	86	Chloralose as an Anaesthetic for Dogs	533
Bull Dog Calf.....	388	Chondroma by Foreign Body in a Swine	798
Bureau of Animal Industry, Twenty-fifth Annual Report of the	135	Chronic Abscess on the Mesen- tery with Fistula Opening into the Small Intestine.....	662
Bursitis, Chronic, of the Withers	77	Chronic Bronchitis of Horses...	567
Cæcum, Rupture of the, in a Mare, Fatal Shock Due to....	663	Chronic Bursitis of the Withers.	77
Calcareous Plates in a Pig's Stomach	668	Chronic Incurable Hock Lame- ness	661
Calculus, Vesical.....	75	Chronic Nephritis in a Dog....	389
Calcutta, Tuberculosis in.....	537	Cirrhosis of the Liver, Hyper- trophic—Biliary Lithiasis.....	250
Calf, a Bull Dog.....	388	Coast, Trip to the.....	295
Calving Fever, Contribution to the Pathogeny and Treatment of	799	Coccidiosis of Cattle and Horses	47
Camphorated Oil in the Treat- ment of Pneumonia in Horse..	540	Colibacillosis	200
Canine Distemper, Preliminary Report of the Bacterial Find- ings in.....	499	Colibacilliose or Diarrhea of Young Animals.....	139
Cancer, Upon Experimental....	695	Colic	211, 225
Carbolic Acid, Some Effects of Internal Administration of....	713	Colic and Lymphangitis of In- ternal Origin.....	250
Career, A Well-Employed.....	706	Colic, Some Extemporaneous Re- marks on	771
Case of Azoturia, Case Report..	221	Colloidal Silver in Canine Medi- cine	251
Case of Esophageal Jabot in a Dog	794	Colon, Impaction of the Double, Succeeded by Rupture.....	789
Case of Generalized Tuber- culosis in the Horse.....	84	Colon, Torsion of the Large in a Horse	540
Case of Quintuple Pregnancy...	796	Colon, Twist of the Double....	388
Cases, Reports of....	52, 221, 335, 521, 653, 774	Colts, Knuckling in—Tenotomy of the Perforans Tendon.....	249
Cases, Some Reports of.....	52	Concerning an Elective Staining of the Spores of Acid Fast Bacilli	87
Castration of Cryptorchids.....	173	Condition Counts.....	297

PAGE	PAGE
Congenital Malformations of External Female Genital Organs. 71	Disarticulation and Displacement of the Petrous Portion of the Temporal Bone in a Dog, Case Report 521
Congestion, Intestinal, in Horses 569	Displacement of the Urinary Bladder in a Heifer..... 535
Conjunctivitis, Purulent, with Corneal Ulceration and Staphylococci 665	Docking, Opposed to..... 66
Contribution to Behring's Bovovaccination 746	Doctor, Horse, in Trouble..... 50
Contribution to the Pathogeny and Treatment of Calving Fever 799	Dog, Ascitis in..... 245
Contribution to the Study of Immunization Against Magana in Dogs 797	Dog, Curious Case in a..... 248
Contribution to the Study of Anjeszky's Disease..... 83	Dog, Peculiar Accident to, Case Report 779
Contribution to the Study of Uterine Lacerations in Cows.. 398	Dog, Pneumectomy in a..... 255
Control of Tuberculosis Through Existing Laws 189	Dogs, Chloralose as an Anaesthetic for..... 533
Correspondence..... 67, 230, 375, 525, 803	Dogs, Preputial Discharge in.... 577
Country Practitioner, Surgery and the..... 484	Dog, Tuberculosis in the..... 535
Cow, A Prolific, Case Report.... 61	Dog, Tetanus in a..... 790
Cow, Fibro-Lipoma on the Forearm of a..... 246	Draft Horse Breeding in America. 510
Cows, Tuberculosis from..... 298	Dropsy of the Allantoid not Diagnosed in a Cow..... 249
Cranial Cavity, Melanosis of the, in a Horse..... 392	Dystokia, an Interesting Case of, Case Report..... 524
Cryptorchids, Castration of..... 173	
Cryptorchidism and External Hermaphroditism in Animals Born of the Same Stallion..... 397	EDITORIAL—
Curious Case in a Dog..... 248	American Veterinary Special.. 438
Curious Lesions of the Spleen in a Horse..... 794	Army Veterinary Bill..... 19
Cystic Fibro-Myoma of an Uterine Horn in a Cat..... 790	A. V. M. A. Matters..... 153
Cystic and Urethral Calculi, Case Report 56	Condition Counts 297
Cystic Testes with Secondary Cysts, Case Report..... 658	Laws Governing Veterinary Practice 152
Cysts, Uterine and Vaginal..... 78	Off to the A. V. M. A. Convention 710
	On to San Francisco..... 578
Diagnosing Glanders and Tuberculosis in Transit..... 492	Past President of A. V. M. A. Decorated by King George.. 580
Diagnosis, Experimental, Sign of Strauss and Vaginalitis in.... 286	Prof. Butler's Talk with the Young Graduate..... 297
Diagnosis of Rabies..... 756	Reply to Dr. Oliver, a..... 712
Diaphragm, Spasms of the, in a Cow 397	Retrospection 439
Diarrhoea, Colibacillose or, of Young Animals 139	The Return of the Horse for Fashionable Purposes..... 710
Diffuse Osteo-Periostitis in a Dog—Visceral Tuberculosis... 79	The Trip to the Coast..... 295
Dilatation, Valvular Disease with 789	Educational Problem, An..... 621
	Emboly, Pulmonary, by Pieces of Trocar 394
	Emphysema, Traumatic Subcutaneous, in a Horse..... 252
	Endorsement of the Army Veterinary Bill by the Profession... 228
	English Review..... 71, 244, 385, 533, 659, 787
	Enormous Hypertrophy of the Mammariae in a Slut..... 392
	Enteritis, Acute..... 789
	Epithelioma, Generalized Primitive of the Colon in a Horse.. 392

	PAGE		PAGE
Esophageal Jabot in a Dog, Case of	794	Eventration, Inguinal, in an Adult Gelding.....	76
EUROPEAN CHRONICLES—		Ewes, Ovariectomy in.....	705
Abscesses of Fixation.....	8	Examinations by State Veterinary Examining Boards in June	314
A Little About Anaphylaxy... ..	279	Exchanges, Abstracts from...71, 244, 385, 533, 659, 787	
Asinine Tuberculosis.....	703	Exorbitant Prolapsus of the Lacrimal Gland.....	254
A Well-Employed Career.....	706	Experience with Hog Cholera..	217
Azoturia—Hemoglobinuria ...	697	Experimental Investigations and Clinical Findings Concerning the Applicability of Novocain for the Purposes of Veterinary Medicine.....	442
Bibliographical Items.....	18, 149	Experimental Surgery.....	10
Chronic Bronchitis of Horses..	567	Fatal Shock Due to Rupture of the Cæcum in a Man.....	663
Colibacillose or Diarrhoea of Young Animals.....	139	Feeding Work Horses.....	348
Concise Notes on the Surgery of the Teats in Cows.....	431	Female Genital Organs, External, Congenital Malformations of	71
Experimental Surgery.....	10	Femur, Fracture of the Neck of the	667
Fever of Malta—Mediterranean Fever	428	Femur, Sarcoma of the, in a Mastiff	790
Flood at Alfort.....	I	Fever of Malta—Mediterranean Fever	428
How Much Blood Can Be Taken from a Horse?.....	288	Fibro-Lipoma on the Forearm of a Cow.....	246
Infectious Granular Vaginitis.	148	Fibrolysin in Tendonitis and Tendo-Vaginitis, Case Report.	223
Insoluble Salts of Radium in Therapy	425	Fibroylsin, Paraplegia Successfully Treated with Sub-dural Injections of, Case Report....	226
Intestinal Congestion in Horses	569	Fibroma of the Vagina in a Cow	543
Kompendium der Angewandten Bakteriologie für Tierärzte.	708	Fistula, Uncommon, Dental in a Dog	663
Linguatulosi	434	Fixation, Abscesses of.....	8
Microbe of Contagious Pleuro-Pneumonia of Cattle.....	143	Flood at Alfort.....	I
Occult Tuberculous Infection in Cows.....	700	Foals, Fracture in.....	387
Onchocereas	575	Foetus, a Mummified.....	74
Other Methods of Skin Sterilization	142	Foetus, Mummified.....	788
Ovariectomy in Ewes.....	705	Foot - and - Mouth Disease, Aphthous Fever or.....	452
Parasitic Mammitis.....	147	Fowls, Intestinal Invagination in.	792
Physiology of the Thymus Gland.....	573	Fractured Cervical Vertebrae, Two Cases of in Horses.....	244
Preputial Discharge in Dogs..	577	Fracture of the Back, Last Cervical Vertebrae and Front Ribs	533
Retrospective Echoes of the Tuberculosis Congress in Washington	13	Fracture of the First and Second Lumbar Vertebrae.....	248
Revival of Old Methods.....	5	Fracture of the Neck of the Femur	667
Robert Koch.....	563		
Sign of Strauss and Vaginitis in Experimental Diagnosis	286		
Spasmodic Intestinal Obstruction	145		
Summer Sores.....	564		
The Veterinarian's Responsibilities	283		
Transmission of Tuberculosis by Inhalation.....	571		
Tuberculous Milk.....	701		
Upon Experimental Cancer...	695		

	PAGE		PAGE
Fracture of the Pelvis and Death from Hemorrhage.....	662	Hernia, Traumatic Abdominal...	256
Fractures in Cattle.....	245	Hock Lameness, Chronic Incur- able	661
Fractures in Foals.....	387	Hog Cholera, Experiment with..	217
Fractures of the Humerus.....	386	Horn, Tumor of Core in a Heifer	73
Fractures of the Humerus in Cattle	244	Horse Doctor in Trouble.....	50
Francisco P. Boulanger, D.V.S..	531	Horse, Draft, Breeding in America	510
French Review..75, 249, 390, 539,	790	Horse, The Return of the, for Fashionable Purposes.....	710
Fundamentals of Good State Work with Infectious Diseases of Domestic Animals.....	299	Horses, Coccidiosis of Cattle and	47
Gangrenous Stomatitis and Gas- tritis in a Dog.....	536	Horse Shows in 1910...364, 530,	767
Gastritis in a Cat.....	659	Horses, Neurectomy in.....	539
Gastrocnemius Muscle, Partial Rupture of the in a Dog.....	80	Horses, Teratoid Developments in Testicles of, Case Report...	58
Gastrocnemius Muscle, Unusual Injury to the.....	386	Horse, The Preventive Dose of Tetanus Antitoxin for the; Its Relation to the American Unit.	597
Gastro-intestinal Worms in a Horse, Producing Nervous Symptoms	86	Horses, Work, Feeding.....	348
Generalized Primitive Epith- elioma of the Colon in a Horse.	392	How Much Blood Can Be Taken from a Horse?.....	288
German Review.....82, 257, 799		Human Medicine, A Few Animal Diseases of Interest to the General Practitioner of.....	638
Glanders and Tuberculosis, Di- agnosing in Transit.....	492	Humerus, Fractures of the....	386
Glidden Tour, The.....	649	Humerus, Fractures of the in Cattle	244
Goitre, Malignant, in a Dog— Carcinoma of the Thyroid Gland with Metastasis in the Lungs	538	Hypertrophic Cirrhosis of the Liver—Biliary Lithiasis.....	250
Granular Venereal Disease of Cattle—Infectious Vaginal Catarrh—Infectious Vaginitis.	646	Hysterotomy, Vaginal.....	255
Graduate, Prof. Butler's Talk with the Young.....	297	Ileo-Caecal Intussusception in a Bitch	787
Hair-Pin in the Oesophagus....	788	Iliac Artery, a Case of Throm- bosis of the.....	245
Heifer, Monstrosity in a.....	247	Impaction of the Double Colon, Succeeded by Rupture.....	789
Heifer, White, Disease.....	659	Imperforated Anus in a Calf....	74
Hematoma, Perineal, Looking Like a Vesical Hernia.....	76	Importance of The Veterinary Profession and the Standing of the Veterinarian in the West..	768
Hematopinic Pitriasis in a Horse.	390	Indigestion with Overloading— Gastrotomy by Free Incision..	544
Hemoglobinuria—Azoturia	697	Infectious Diseases of Domestic Animals, Fundamentals of Good State Work with.....	299
Hermaphrodisism, External, Cryp- torchidy and in Animals Born of the same Stallion.....	397	Infectious Granular Vaginitis...	148
Hermaphrodisism in a Mule Colt, Case Report.....	655	Influenza, Human, Transmissi- bility of to Cats.....	389
Hermaphrodite Operation, Case Report	780	Influenza, Investigations Con- cerning the Control of in the Horse	85
Hernia, Acquired Diaphragmatic in a Foal.....	86	Influenza with Rheumatic com- plications, Case Report.....	368
Hernia, Double Inguinal, Radical Treatment of, in a Four Weeks' Colt.....	75		

	PAGE		PAGE
Inguinal Eventration in an Adult Gelding	76	Lacock, J. Stuart, V.M.D.....	531
Insoluble Salts of Radium in Therapeutics	425	Lacrimal Gland, Exorbitant Pro- lapse of the.....	254
Inspection of the Omasium in a Calf	660	Lambs, Succulent Feed for.....	328
Interesting Case, An.....	535	Laminitis in Osteomalacic Horses, Notes Upon.....	78
Interesting Case of Dystokia, Case Report.....	524	Laparo. Hysterotomy in a Cow.	247
Interesting Ovario—Hysterec- tomy	537	Laws Governing Veterinary Practice	152, 419, 557
Interesting Spleen—a Case of Hodgkin's Disease.....	389	Lesions, Unusual, of the Foot...	387
Internal Diseases—Reports from the Ninth International Veteri- nary Congress at The Hague..	257	Linguatulosus	434
Intestinal Congestion in Horses.	569	Lip-and-Leg Ulceration (Necro- bacillosis) Its Cause and Treatment	154, 315
Intestinal Invagination in Fowls.	792	Lip-and-Leg Ulceration (Necro- bacillosis) of Sheep.....	207
Intestinal Obstruction.....	145	Lip-and-Leg Ulceration of Sheep.	38
Intestinal Obstruction in a Dog with Unusual Clinical History.	534	Little About Anaphylaxy.....	279
Intestinal Sclerostomiasis of Horses	666	Localization of Actinomyces in a Cow.....	254
Intestines, Small, Rupture of the, with Perforative Peritonitis...	538	Lymphangitis and Colics of In- ternal Origin.....	250
Intussusception, Irreducible.....	787	Malignant Goitre in a Dog— Carcinoma of the Thyroid Gland, with Metastasis in the Lungs	538
Invagination, Intestinal, Peculiar Case of.....	542	Malta, Fever of—Mediterranean Fever	428
Inversion of the Uterus in the Mare, Case Report.....	373	Mammæ, Enormous Hyper- trophy of the in a Slut.....	392
Investigations Concerning the Control of Influenza in the Horse	85	Mammary Abscess in a Cow....	247
Investigations Concerning the Hæmorrhagic Infarcts in Beef Livers	83	Mammitis, Parasitic.....	147
Irreducible Intussusception.....	787	Mange, Psoroptic, in Dog.....	396
Italian Review.....	254, 663, 796	Maxillary Bone, Inferior, Sinus in	536
Itch, Mad, or Pruritis in Cattle..	219	Medical and Pharmaceutical Chemistry, Text Book of.....	69
Jasper Jay "Also Ran".....	87	Melanosis of the Cranial Cavity in a Horse.....	392
Jaundice Following Castration in the Horse.....	791	Meningitis, Cerebro-spinal.....	762
Jaw, Lower, Paralysis of the....	660	Methods of Skin Sterilization, Other	142
Jaw, Osteosarcoma of the in a Horse	664	Methods, Old, Revival of.....	5
J. Stuart Lacock, V.M.D.....	531	Microbe of Contagious Pleuro- pneumonia of Cattle.....	143
Jubilee Dinner of Alumni Asso- ciation of the New York- American Veterinary College.	49	Milk Fever, So-called, Theory and Therapy of.....	349
Kansas City Veterinary College.	355	Milk, Production of.....	356
Kansas City Association of Veterinarians	362	Milk, Tuberculous.....	701
Knuckling in Colts—Tenotomy of the Perforans Tenotom....	249	Modification of Southern Cattle Quarantine	263
Koch, Robert, M.D.....	532, 563	Monstrosity	373
Kompendium der Angewandten Bakteriologie für Tierärzte...	708	Monstrosity in a Heifer.....	247
		Moral Life, the Veterinarian and the.....	515
		Moyer, Oliver R., D.V.S.....	532

	PAGE		PAGE
Mule Colt, Hermaphroditism in a Case Report.....	655	Opposed to Docking.....	66
Multiple Lipomata of the Peritoneum in Ox.....	71	Ossified Cardiac Auricles in a Horse	539
Mummified Foetus.....	74	Osteitis, Phalangeal, Complicated with Osteitis from Laminitis..	543
Mummified Foetus.....	788	Osteomalacic Horses, Notes Upon Laminitis in.....	78
Muscle, Great Posterior Straight of the Head, Tearing of the in Sucking Calves.....	793	Osteo-Periostitis, Diffuse, in a Dog—Visceral Tuberculosis...	79
		Osteosarcoma of the Jaw in a Horse	664
Nagana, Contribution to the Study of Immunization Against in Dogs.....	797	Otitis, Suppurative Internal, in a Dog	395
Nephritis, Chronic, in a Dog....	389	Ovaro-Hysterectomy Interesting.	537
Neurectomy in Horses.....	539	Ovariectomy in Ewes.....	705
News and Items.....	135, 276, 558, 691	Overloading, Indigestion with Gastrotony by Free Incision..	544
New York-American Veterinary College, Jubilee Dinner of Alumni Association of.....	49		
New York State, Rabies and Its Methods of Control in.....	581	Pamphlets Received.....	709
No Prospect of Passage of the Army Veterinary Bill.....	63	Papilloma of the Urethra and Bladder in a Cow.....	256
Note Book, Some Cases from, Case Report.....	656	Paralysis Bulbara Infectiosa in the Dog.....	86
Novocain, Experimental Investigations and Clinical Findings Concerning the Applicability of for the Purposes of Veterinary Medicine	442	Paralysis of the Anterior Crural Nerve	662
		Paralysis of the Lower Jaw....	660
OBITUARY—		Paralysis of the Penis Followed with Complete Slough of the Corpus Cavernosum.....	542
Dr. Chas. Warrenner.....	804	Paralysis, Suprascapular.....	388
Earl W. Sunderlin.....	384	Paraplegia Successfully Treated with Sub-dural Injections of Fibrolysin, Case Report.....	226
Eldon L. Loblein.....	384	Parasites, Internal, a Few of the Horse and Sheep, Case Report	522
Francisco P. Boulanger, D.V.S.	531	Parasites in Sheep and Horses, Case Report.....	60
J. Stuart Lacock, V.M.D.....	531	Parasitic Mammitis.....	147
Oliver R. Moyer, D.V.S.....	532	Partial Rupture of the Gastrocnemius Muscle in a Dog.....	80
Robert Koch, M.D.....	532	Pastern, Two Cases of Fracture of the First, Followed by Recovery	668
T. G. Duff, V.S.....	804	Past President of A. V. M. A. Decorated by King George....	580
Obstetrics, Veterinary, Case Report	774	Peculiar Accident to Dog, Case Report	779
Obstruction, Intestinal, in a Dog with Unusual Clinical History.	534	Peculiar Case of Intestinal Invagination	542
Occult Tuberculous Infection in Fowls	700	Peculiar Case of Tuberculosis in a Horse.....	385
Oesophagus, Hair-Pin in the....	788	Pelvic Fractures, Some.....	660
Off to the A. V. M. A. Convention	710	Pelvis, Fracture of the, and Death from Hemorrhage....	662
Omasium, Impaction of the, in a Calf	660	Penis, Paralysis of the, Followed with Complete Slough of the Corpus Cavernosum.....	542
Onchocereas	575		
On to San Francisco.....	578		
Operation, Hermaphrodite, Case Report	780		

	PAGE		PAGE
Pericarditis, Traumatic.....	385	Protozoon Diseases, Prophylaxis and Pathology of the.....	258
Pericarditis, Sero-Fibrinous, Rare Case of, in the Horse.....	793	Pruritus or Mad Itch in Cattle..	219
Pericarditis, Traumatic, in a Milch Cow.....	665	Pseudo-tuberculous Enteritis of Cattle, Avine Tuberculin as a Diagnostic Agent in Chronic..	261
Pericarditis, Tubercular.....	81	Psoroptic Mange in Dog.....	396
Perineal Hematoma Looking Like a Vesical Hernia.....	76	Psychosis, Tuberculous, in a Cat	395
Peritoneum, Multiple Lipomata of the in Ox.....	71	Publishers' Department..	138, 278, 424, 562, 694, 814
Peritonitis Following Improper Puncture of the Rumens.....	541	Pulmonary Emboly by Pieces of Trocar	394
Phalangeal Osteitis Complicated with Osteitis from Laminitis..	543	Purpura, Antistreptococcic Serum in	396
Physiology of the Thymus Gland	573	Purulent Conjunctivitis with Corneal Ulceration and Staphylocoma	665
Pig's Stomach, Calcareous Plates in a.....	668	Pyaimic Arthritis and the Use of Nuclein Solution in Its Treatment, Case Report.....	365
Pitriasis, Hematopinic in a Horse	390	Quarantine, Modification of Southern Cattle.....	263
Pleuro-Pneumonia, Contagious, of Cattle, Microbe of.....	143	Rabies and Its Methods of Control in New York State.....	581
Pneumectomy in a Dog.....	255	Rabies, Diagnosis of.....	736
Pneumonia, Camphorated Oil in the Treatment of, in Horse...	540	Radical Treatment of a Double Inguinal Hernia in a Four Weeks' Colt.....	75
Poisoning, Sulphur, in Horse....	74	Radium, Insoluble Salts of, in Therapy	425
Pony, Catalepsy in, Case Report.	653	Rare Case of Sero-Fibrinous Pericarditis in the Horse.....	793
Posterior Members, Tenotomy in Both, Case Report.....	782	Record, The Veterinary.....	692
Practical Bandage, A.....	650	Recti, Prolapsus, in a Mare after Difficult Labor.....	391
Practice, Some Notes from....	247	Rectum and Colon, Prolapsus of the, in a Donkey.....	664
Pregnancy, Quintuple, Case of..	796	Reply to Dr. Oliver.....	712
Preliminary Note Upon the New Operation for Roaring in Horses	72	Reports from the Ninth International Veterinary Congress at the Hague—Internal Diseases.	257
Preliminary Report of the Bacterial Findings in Canine Distemper	499	Reports of Cases....	52, 221, 335, 521, 653, 774
Preputial Discharge in Dogs....	577	Responsibilities, The Veterinarian's	283
Preventive Dose of Tetanus Anti-toxin for the Horse, Its Relation to the American Unit	597	Retrospection	439
Primitive Sarcoma of the Kidney, Generalized to the Lungs in a Dog.....	793	Retrospective Echoes of the Tuberculosis Congress in Washington	13
Primitive Spasmodic Stenosis of the Oesophagus in a Horse...	669	Return of the Horse for Fashionable Purposes.....	710
Production of Milk.....	365	Review, Belgian.....	395, 666
Prof. Butler's Talk with the Young Graduate.....	297	Review, English.....	71, 244, 385, 533, 659, 787
"Profession, Veterinary".....	519	Review, French..	75, 249, 390, 539, 790
Prolapsus of the Rectum and Colon in a Donkey.....	664	Review, German.....	82, 257, 799
Prolapsus Recti in a Mare after Difficult Labor.....	391		
Prolific Cow, Case Report.....	61		
Prophylaxis and Pathology of the Protozoon Diseases.....	258		
Prostatic Enlargement Cured by Castration	537		

PAGE	PAGE
Review, Italian.....254, 663, 796	SOCIETY MEETINGS—
Review of Old Methods..... 5	B. A. I. Veterinary Inspectors'
Rheumatic Complications, In- fluenza with, Case Report..... 368	Association of Chicago..... 132
Roaring 23	273, 374
Roaring in Horses, Preliminary Note Upon the New Operation for 72	California State Veterinary Medical Association..... 270
Robert Koch, M. D.....532, 563	Colorado Veterinary Medical Association 553
Round Celled Sarcoma in a Mare 72	Connecticut Veterinary Medical Association 810
"Roup," Avian Diphtheria or... 214	Forty-seventh Annual Meeting, American Veterinary Med- ical Association..... 670
Rumen, Peritonitis Following Improper Puncture of the... 541	Genessee Valley Veterinary Medical Association..... 268
Rupture of the Small Intestines with Perforative Peritonitis... 538	Indiana Veterinary Medical Association, Fourteenth An- nual Meeting..... 399
Rusty Nail in a Seal's Fin..... 386	International Commission on Control of Tuberculosis Among Domestic Animals.. 415
Salicylic Acid and Its Sodium Salts, Absorbing Power of Skins of Animals for..... 82	Maine Veterinary Medical As- sociation 133, 555
Sarcoma of the Femur in a Mastiff 790	Manitoba Veterinary Associa- tion 130
Sarcoma, Primitive, of the Kid- ney, Generalized to the Lungs in a Dog..... 793	Massachusetts Veterinary As- sociation 555
Sarcoma, Round Celled, in a Mare 72	Michigan M. V. M. A., Special Meeting of the..... 122
Science, Veterinary, and Its Problems 328	Michigan State Veterinary Medical Association..... 127
Sclerostomiasis, Intestinal, of Horses 666	Minnesota State Veterinary Medical Association..... 101
Seal's Fin, Rusty Nail in a..... 386	Missouri Valley Veterinary Association, Semi-Annual Meeting of the..... 114
Senate, Army Veterinary Bill Passes the..... 65	New York State Veterinary Medical Society..... 418
Sequel, Uncommon to a Frac- tured Pelvis..... 74	North Carolina V. M. A..... 811
Sheep, Lip-and-Leg Ulceration of 38	North Dakota Veterinary Medical Association..... 264
Sheep, Lip-and-Leg Ulceration of (Necrobacillosis) 207	Ontario Veterinary Associa- tion 128
Shows, Horse, in 1910..364, 530, 767	Portland Veterinary Medical Association 417
Sickness, The Stiff..... 363	Resume of the Proceedings of the Keystone Veterinary Medical Association, Phila- delphia, Pa..... 689
Signs of Strauss and Vaginalitis in Experimental Diagnosis.... 286	Schuylkill Valley Veterinary Association 809
Silver, Colloidal, in Canine Medi- cine 251	Sixteenth Annual Meeting of the Missouri Valley Veteri- nary Association..... 684
Sinus in Inferior Maxillary Bone 536	Society of the Alumni of the School of Veterinary Medi- cine, University of Penn- sylvania 545
Skins of Animals, Absorbing Power of, for Salicylic Acid and Its Sodium Salts..... 82	
SOCIETY MEETINGS—	
Alabama Veterinary Medical Association 807	
Alumni Association, New York-American Veterinary College 274	
Annual Meeting United States Live Stock Sanitary Associa- tion, Chicago, 1910..... 690	

PAGE	PAGE
SOCIETY MEETINGS—	Sulphur Poisoning in Horse.... 74
United States Live Stock	Summer Sores..... 564
Sanitary Association..... 88	Suppurative Ascending Chronic
Veterinary Medical Associa-	Angiocholitis in a Cat..... 394
tion of New York City..132, 550	Suppurative Internal Otitis in a
Virginia State Veterinary	Dog 395
Medical Association.....552, 811	Suprascapular Paralysis..... 388
Wisconsin Society of Veterin-	Surgery and the Country Prac-
ary Graduates..... 805	titioner 484
York County Veterinary Med-	Surgery, Experimental..... 10
ical Association.....134, 556	Surgery of the Teats in Cows,
Some Cases from Note Book,	Concise Notes on..... 431
Case Report..... 656	Swine, Chondroma by Foreign
Some Effects of Internal Admin-	Body in a..... 798
istration of Carbolic Acid.... 713	Tearing of the Great Posterior
Some Extemporaneous Remarks	Straight Muscle of the Head in
on Colic..... 771	Sucking Calves..... 793
Some Notes from Practice..... 247	Teats, Surgery of the, in Cows,
Some Parasites in Sheep and	Concise Notes on..... 431
Horses, Case Report..... 60	Temporal Bone, Disarticulation
Some Pelvic Fractures..... 660	and Displacement of the, in a
Some Reports of Cases..... 52	Dog, Case Report..... 521
Spasmodic Intestinal Obstruc-	Tendo Achillis, Tendonitis of the
tion 145	in a Dog..... 82
Spasms of the Diaphragm in a	Tendonitis and Tendo-Vaginitis,
Cow 397	Fibrolysin in, Case Report... 223
Sphincter Ani, Unique Case of	Tendonitis of the Tendo Achillis
Laceration of the, Case Re-	in a Dog..... 82
port 783	Tenotomy in Both Posterior
Spleen, an Interesting—A Case	Members, Case Report..... 782
of Hodgkin's Disease..... 389	Teratoid Developments in Test-
Spleen, Curious Lesions of the,	icles of Horses, Case Report.. 58
in a Horse..... 794	Testes, Syctic, with Secondary
State Veterinary Examining	Cysts, Case Report..... 658
Boards, Examinations by, in	Testing the Treatment by Bier's
June 314	Method 77
State Work, Good, Funda-	Tetanus Antitoxin, Preventive
mentals of, with Infectious	Dose of, for the Horse; Its
Diseases of Domestic Animals. 299	Relation to the American
Status of the Army Veterinary	Unit 597
Bill 785	Tetanus as a Sequel to Opera-
Stenosis, Primitive Spasmodic,	tion for Umbilical Hernia by
of the Oesophagus in a Horse. 669	Ligature, Case Report..... 371
Sterilization, Skin, Other Meth-	Tetanus in a Dog..... 790
ods of..... 142	Text Book of Medical and Phar-
Stiff Neck or Cervical Myositis	maceutical Chemistry..... 69
in Dog..... 792	The Glidden Tour..... 649
Stomatitis, Gangrenous, and	Theory and Therapy of Milk
Gastritis in a Dog..... 536	Fever, So-called..... 349
Strangles, Abscess of, in the	Therapeutics, Biological, in Vet-
Mediastinum, Communicating	erinary Practice..... 611
with a Sub-Sternal Purulent	Therapeutic Value of Crystal-
Collection 795	lized Boric Acid..... 80
Strangles, Case Report..... 370	The Stiff Sickness..... 363
Strangulated Diaphragmatic	The Trip to the Coast..... 295
Hernia in a Mare..... 666	The Veterinarian and the Moral
Strongylus Armatus..... 246	Life 515
Succulent Feed for Lambs..... 338	

PAGE	PAGE
The Veterinary Record..... 692	Typical Case of Malignant
Three Cases of Surgery on	Catarrh 661
Bones 253	Ulceration, Lip-and-Leg (Necro-
Thrombosis of the Axillary Ar-	bacillosis), Its Cause and
tery 796	Treatment 154, 315
Thrombosis of the External Iliac	Ulceration, Lip-and-Leg of Sheep 38
Artery, a Case of..... 245	Umbilical Hernia, Tetanus as a
Thymus Gland, Physiology of	Sequel to Operation for, by
the 573	Ligature, Case Report..... 371
Tongue, Amputation of the, Case	Uncommon Dental Fistula in a
Report 370	Dog 663
Torsion of the Large Colon in	Uncommon Sequel to a Fractured
the Horse..... 540	Pelvis 74
Transmissibility of Human In-	United States Department of
fluenza to Cats..... 389	Health, What Is to Become of
Transmission of Tuberculosis by	the Veterinarian in the..... 230
Inhalation 571	Unique Case of Laceration of the
Traumatic Abdominal Hernia... 256	Sphincter Ani, Case Report... 783
Traumatic Pericarditis..... 385	Unusual Injury to the Gastroc-
Traumatic Pericarditis in a Milch	nemius Muscle 386
Cow 665	Upon Experimental Cancer..... 695
Traumatic Sub-Cutaneous Em-	Unusual Lesions of the Foot... 387
physema in a Horse..... 252	Urethra and Bladder, Papilloma
Trichinosis, Case Report..... 657	of the, in a Cow..... 256
Tubercular Pericarditis..... 81	Urethral and Cystic Calculi, Case
Tuberculosis 475	Report 56
Tuberculosis, Asinine..... 703	Urinary Bladder, Displacement of
Tuberculosis, A Case of General-	the, in a Heifer..... 535
ized, in the Horse..... 84	Uterine and Vaginal Cysts..... 78
Tuberculosis, Bovine, in Iowa	Uterine Lacerations in Cows,
Herds 736	Contribution to the Study of.. 398
Tuberculosis and Fracture of	Uterus, Inversion of the, in the
First Rib in a Mare..... 73	Mare, Case Report..... 373
Tuberculosis, Control of Through	Uterine Horn, Cystic Fibro-
Existing Laws..... 189	Myoma of an, in a Cat..... 790
Tuberculosis from Cows..... 298	Vaccines and Bacterins in Vet-
Tuberculosis in Calcutta..... 537	erinary Practice..... 505
Tuberculosis in the Dog..... 535	Vagina, Fibroma of the, in a Cow 542
Tuberculosis, Peculiar Case of,	Vaginal Hysterotomy..... 255
in a Horse..... 385	Vaginitis, Infectious Granular... 148
Tuberculous Infection, Occult, in	Value of the Antiadenitic Vac-
Fowls 700	cination 797
Tuberculous Milk..... 701	Valvular Disease with Dilatation 789
Tuberculosis, Transmission of, by	Veneral Diseases, General, of
Inhalation 571	Cattle — Infectious Vaginal
Tuberculosis; Where Are We At 467	Catarrh—Infectious Vaginitis. 646
Tuberculous Psychosis in a Cat.. 395	Vertebrae, Fracture of the First
Tumor of One Horn Case in a	and Second Lumbar..... 248
Heifer 73	Vertebrae, Two Cases of Frac-
Twenty-fifth Annual Report of	tured in Horses..... 244
the Bureau of Animal Industry 135	Vesical Calculus..... 75
Twenty-seventh Annual Com-	Veterinary, Importance of the
menicement of Chicago Veter-	Profession and Standing of the
inary College..... 559	Veterinarian in the West..... 768
Twist of the Double Colon..... 388	Veterinary Obstetrics, Case Re-
Two Cases of Fracture of the	port 774
First Pastern Followed by Re-	
covery 668	

	PAGE		PAGE
Veterinarians, Kansas City As-		Veterinary Science and Its Prob-	
sociation of.....	362	lems	328
Veterinarian's Responsibilities...	283		
Veterinary College at Berlin....	339	What Is to Become of the Vet-	
Veterinary College, Kansas City.	355	erinarian in the Projected	
Veterinary Department, Army.	63, 228	United States Department of	
Veterinary Medical Association		Health	231
Meetings (Table).....	137, 277,	White Heifer Disease.....	659
	423, 561, 693, 812	Worms, Gastrointestinal in a	
Veterinary Practice, Laws Gov-		Horse, Producing Nervous	
erning	152, 557	Symptoms	86
"Veterinary Profession".....	519		

AMERICAN VETERINARY REVIEW.

APRIL, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, February 15, 1910.

THE FLOOD AT ALFORT.—The news of the great calamity that has struck France by the rising of the charming little river, the Seine, has been spread all over the world, and the terrific details of the disasters would scarcely be in their proper place in our journal. But yet there is an episode of the flood which cannot be ignored, and that we think deserves in our pages a notice of record and one of admiration.

Alfort, the great veterinary school, the one that every veterinarian knows of, the one that every veterinarian that has come from the old and the new world to visit France and her capital has seen; they have all called at Alfort; they recollect her magnificent entrance with the statues of Bourgelat, Bouley and Nocard; they remember the grand "Cour des hopitaux," the grand public clinical center; they have admired the beautiful park * * * all those have been covered with the ugly and angry waters. The work of the school had to be stopped. The school was evacuated. The students had to leave. They did it only when the danger was imminent. And the dormitories, the class-rooms, the dissecting rooms, the amphitheatres were at once organized so as to serve as lodging for the soldiers and sailors who were acting as saviours in the submerged surrounding districts.

But soon the blockade was complete. Water was all over. And then came the flow of the *refugees*—the poor people, men,



The rise of the Seine. The ferry-man from National Bridge to the Bridge of Tolbiac.

women and children who were chased away from their homes by the torrent in furor; and, with them their animals; horses, cattle and dogs, they all came to take refuge in the school from the very first hour of danger.



Administration Building of the Veterinary School, Alfort,
to left of picture, behind boatmen.



On the "Berthon." Professor Barrier, Director of the Veterinary School, Alfort,
giving some instructions.

The faculty, the director of the school, Prof. Barrier, the professors and a few of the students that had remained gave succor to all. The devotion of every one and their generosity for all those to whom they offered shelter, food, clothes and comfort were admirable, and the conduct of every one in those sad hours deserve the admiration of the entire profession.

For future years, with the inundation of Alfort and the noble and eminent succor that she gave to such a frightfully suffering



Inundations of January 29th, 1910. Houses in Alfort; the principal thoroughfare.

population, 1910 will be recorded among the memorable pages of the history of that great institution.

Through the kindness of Prof. G. Petit I have obtained some concise statistics. The school has prepared 13,122 meals, 450 refugees were lodged, fed and clothed, and besides, 789 others from the surrounding villages were also fed. There were 1,104 pieces of clothing and shoes given to those who were remaining in the school, and to outsiders 1,038.

We hear that Director Barrier is preparing for publication, to appear in the *Récueil* of March, a long history of the sad

event, which will be extensively illustrated. We have managed to obtain a few photos, which, if they come out well, will give our readers a few of the sad souvenirs of Alfort under water.*

* * *

THE REVIVAL OF OLD METHODS.—Of late it seems as if some of the therapeutic agents of olden times were gaining a new life and if their beneficial effects were again going to be called upon by veterinarians as well as by physicians.

In April, 1909, the *Revue Generale* of Prof. Leclainche was stirring the attention in favor of *setons* whose therapeutic or hygienic usefulness had lost almost all their prestige since half a century. Microbiology, then just born, having, notwithstanding the plea made by Bouley in favor of the seton, killed among the majority of practitioners the belief they had in their old counter irritant, which was and has been since so terribly used and abused by empirics. And yet how many are the cases on record which tell of the good results which had been gained by the application at the proper time of the old classical piece of tape introduced under the skin; and if it is only to recall of few successful instances, how many cases of rebellious lameness, to only mention those which had resisted all kinds of treatment and were rapidly removed by the introduction of a seton.

In human medicine, it is *venesection* which finds a defender in Doctor E. Renaux, who at the Société Clinique de Bruxelles has revindicated *venesection and its indications* in a masterly communication. Venesection has had great days of favor and times of decadence, and notwithstanding the efforts of Hayem, Huchard, Arloing and others, it does not hold in human therapeutics the place to which it is entitled. Yet its indications are numerous. It manifests its action upon the pulse, which first becomes accelerated, more or less as the escape of blood is more

* Apologies are offered for notes in connection with cuts, which were translated by the junior editor, and may, therefore, not be as full or explicit as they perhaps could have been, if written especially for the article by some one familiar with the actual conditions there.

rapid and abundant, but it soon returns to normal. The tension of the pulse is reduced; first slowly, then more rapidly, and then again slower and slower. The temperature generally lowers down after an abundant bleeding, although it may also rise. One of the most interesting manifestations is shown in the changes of the general nutrition; reducing the mass of the blood, venesection relieves congestion of viscerae, especially the kidneys. Again to the point of view of the blood corpuscles. After bleeding, a diminution in their number is first noticed, and it becomes more marked after a few hours, a phenomena which is due to the dilution more and more marked by the serum. For Doct. Renaux the indications of venesection are quite numerous; pneumonia, acute œdema of the lungs, cardiac affections, cerebral congestion, eclampsia, etc. In conclusion, the doctor says that he ignores the lancet, and following the method that is resorted to in veterinary practice, he employs to puncture the vein of his patients the trocar in the shape of the needle of a syringe of Pravaz of a large size.

* * *

And now another addition is made to the application of these two old therapeutic methods; a third one is spoken of and placed on record in the *Recueil de Medecine Veterinaire*, by two army veterinarians, M.M. Lemire and Ducrotoy. They write on the use of *dry cups* and their applications.

They have used dry cupping in many occasions and have obtained very good results. This is an old weapon of the surgical veterinary arsenal which, perhaps too exclusively, is now ignored. Doctor Bier of passive hyperhemia renown, has revived its use in giving to its effects an interpretation diametrically different to the classical theories.

To this day dry cups were used to relieve congestion, but Doctor Bier has had the original idea of considering and of proving that on the contrary they act in producing a local but deep hyperhemia of the regions upon which they are applied, and that it is precisely to this artificial congestion that their efficacy is

due. And besides, that beneficial action is remarkably manifested upon inflamed tissues, as the supplementary hyperhemia that is produced, assists powerfully the natural defensive hyperhemia already existing. And again, by the suction that dry cupping exercises, it promotes an action of evacuation, it produces a kind of mechanical disinfection in taking or sucking up the pus of abscesses, the inflammatory exudates, the morbid liquids of fistulas, and places the diseased tissues in the best possible condition for natural vital resistance.

M.M. Lemire and Ducrotoy have used the dry cup of Bier, or again a single ordinary glass in which the air was rarefied by the burning of a small piece of hydrophile wadding. The glass is then quickly applied on the skin properly shaved and disinfected. If the rarefaction has been sufficient an active or passive hyperhemia is produced according to the vacuum made. It is sometimes necessary to lubricate the border of the glass with vaseline to facilitate the adhesion. It is better also to have the skin a little moist. Each application must not last more than five minutes, when the cup is removed by allowing a little air to enter the glass. At the place where the cup has been applied, there remains a more or less elevated swelling, round, painful and more or less defined. Cupping can be thus applied on any part of the body. According to the writers, the hyperhemia resulting from the application possesses a treble action: analgesic, bactericid and regeneratrice. It relieves the pain of great traumatism, sometimes so violent, that of synovial suppuration; by the hyperleucocytosis that it promotes, it reduces acute inflammations at the time when they began and shortens their duration when they are once established. It prevents the resorption of septic products and therefore complications; it stimulates the delimitation and elimination of necrosed tissues; it simplifies surgical interference and finally co-operates to the regeneration of injured tissues.

Among the indications where dry cuppings have been used by the two writers they mention, for the treatment of contused and penetrating wounds, for that of suppurating traumatic syno-

vitis of the sheath of the hock joint, for a large and deep cyst of the costal angle of the shoulder, in two cases of broken knees, a wound of the fetlock, abscess of the head, of the neck, etc. All the results have been such that in the use of this method any one is bound to consider it as a most precious therapeutic means at the disposal of veterinarians.

* * *

ABSCESSSES OF FIXATION.—Under that name, which I think deserves more, that of revulsive abscesses or of localization, is understood here an old counter irritating or revulsive method; although but little known, which consists in the formation of abscesses by pyogenic subcutaneous injections, it is the method of Fochier.* Having just been considering the old methods of setons, venesection and dry cupping, this subject is not out of place.

In 1875 Doctor Fochier, an obstetrician of renown, remarked in his clinical observations that very severe cases of puerperal fever would improve, sometimes suddenly, as soon as manifestations of localized suppuration would appear, such as an abscess of the breast, of the iliac fossa, of the subcutaneous adipose tissue. But if suppuration did not appear, the prognosis was serious. Starting from these observations, after various attempts, in one desperate case of puerperal fever, he resorted to an injection of oil of turpentine under the skin. An abscess developed rapidly and in a few days the patient had recovered. Since, Doctor Fochier injects systematically in all his severe cases of puerperal fever one or several cubic centimeters of oil of turpentine. If the abscess does not come, he renews it and if necessary increases the dose. And he advances the remark that if the suppuration comes rapidly the patient can be considered as saved, and if on the contrary an abscess is not obtained with the ordinary dose, the case may be considered very unfavorable. In fact the injection becomes an agent of almost positive prognosis.

* (1) Drouin, *Rev. Gener. de Medec. Veter.* Janvier, 1910.

This new method was first limited to gynecology, but finally, yet not as extensively as one might think, it has entered the domain of general practice, and with it there has been successfully treated severe cases of pneumonia with tendency to suppuration, erysipelas, cerebro-spinal meningitis, typhoid fever and scarlatina. Of course some objections had been made against a method which was rather empirical and needed scientific basis. With those in view experiments were carried out and in the last years it has become more in use, and statistics have been established in its favor.

* * *

In veterinary medicine, the method of revulsion by abscess of fixation is quite old and already in 1884 one of our confrères, Mr. Chassaing, demonstrated that the subcutaneous injections of oil of turpentine in doses of 2 to 4 grammes in horses, of 6 to 15 in cattle, and of 0.50 gramme in small animals, gave fair results in diseases of the chest and in old lameness of the shoulder or of the hip. These were also used by Cagny and others in chronic lameness, in pneumonias, and even in the treatment of hyarthrosis and tenositis. Drouin has also resorted to it in infections of distemper and in pneumonias. He considers the method as a sure, quick and economical derivative.

The chest, on each side of the median line over the projection made by the superficial pectoral muscle, the sterno humeralis, or on the sides of the neck or again the ribs, are the places where the injections can be made, in the subcutaneous tissue using a small glass hypodermic syringe. The ordinary dose for a horse according to Drouin has been in average 5 c. c. on each side. In severe cases the dose can be doubled. If the animal reacts vigorously by the rapid formation of the purulent collection, recovery may be considered as certain. If, on the contrary, scarcely an œdema follows, a fatal ending is very probable.

The abscesses do not require any special attention, they demand the ordinary treatment. But, as says Drouin, can the

method enter into our general practice and would not the formation of an abscess be considered by a critical owner as an unnecessary addition to the ailments of his animal?

I am not sure that it is not an overstretch of my memory, but it seems to me as if I have recollections of similar applications made by some veterinarians in the States years ago. But I cannot find any record of them. I would be thankful if some of my confrères across the Atlantic would give me information on this.

* * *

EXPERIMENTAL SURGERY.—At this time when the “Rockefeller Institute for Researches” is the subject of the attacks made by some of the daily papers, the following will certainly be subjects of actuality.

Under the heading of “Experiments of Dr. A. Carrel,” the Director of Rockefeller Institute, the eminent French surgeon, Prof. Pozzy has delivered a lecture, from which I find the following extracts in the *Presse Medicale*.

The starting point of these experiments is in the technic followed by Doctor Carrel for the suture of blood vessels, suture mouth to mouth or end to end with extremely fine needles and threads and with most minutious aseptic attentions.

1. *Patching up of the Abdominal Aorta with a Piece of Peritoneum*.—In a dog of medium size, the anterior half of the abdominal aorta is resected in a surface of 2 centimeters. The vessel is patched up with a double piece of the peritoneum of the transversal abdominalis muscle, of the same animal and kept for several minutes in vaseline. Twenty-two months after the operation, laparotomy. The pulsations of the abdominal aorta are normal, there are no visible marks of the primitive operation, nor reduction in the caliber of the blood vessels. Doct. Carrel performs the resection of a segment of the aorta involving the piece which had been patched up and re-establishes the circulation with a segment of the vena cava. The animal survives.

2. *Fresh Veins are Transplanted.*—In a dog, a segment of the jugular is transplanted on the carotid; six months after the histological examination of the artery shows it having a thick and strong coat. Hence the possibility of treating aneurism by the removal of the tumor and replacing it by a piece of femoral or saphena vein.

3. *Partial Displacement of the Circulation in the Thyroid Gland.*—A dog had goitre. Doctor Carrel anastomozes the peripheric end of the internal jugular vein with the central of the carotid. After several months, the goitre is reduced in size, the jugular and thyroid veins have assumed the aspect of arteries and their dimension has remained normal.

4. *Preservation of Blood Vessels in Cold Storage.*—In the presence of the results thus obtained, it becomes necessary to have at one's disposal blood vessels for rechange, to use when the time comes. Carrel secures on the living animal or shortly after its death, with the most delicate asepsy, pieces of blood vessels, dips them and washes them in Locke's solution and places them in sterilized glass tubes where they are kept in damp atmosphere by the addition of a few drops of water or of solution. The tubes are then closed with the alcohol lamp and put in the cold room at a temperature of 0.1° Centigrade. After six or eight months the blood vessels are still perfect; taken out of the cold room and dipped in warm vaseline, they are ready to be used for grafting. Hetero-transplantation of fresh blood vessels, that is the grafting of a carotid from dog to the abdominal artery of a cat have been done successfully.

5. *Temporarily Removed Kidney is Replaced in One Animal.*—The left kidney of a slut is taken out for a few minutes and put back in its place in the abdominal cavity with sutures of the blood vessels and of the ureters; the animal recovers rapidly. Fifteen days after the right kidney is removed; no bad effect follows, no albumin in the urine; the slut gets pregnant and delivers eleven puppies a year after the operation.

6. *Transplantation of Kidney from One Animal to Another of the Same Species.*—Doct. Pozzy states that he saw at the Institute two dogs, a yellow and a white. The first had one kidney from the second. Both were in perfect health.

7. *Transplantation of Legs.*—Once a complete union by first intention was obtained of the hind leg of a fox terrier, recently killed, upon another dog which had just been amputated. The bones were brought and held together with the Elsberg's splint (perforated aluminum tube introduced in the medullary canal) the muscles, nerves and blood vessels were placed opposite each other, circulation was re-established and in two weeks cicatrization was completed.

* * *

As to whatever good may general surgery gain by those wonderful results, there is no doubt that they will be appreciated all over the world. Although I am not yet prepared to see what opportunities may present themselves for us veterinarians to apply them. Still it is certain that many of them have attracted the attention of others besides the daring director of the New York Institute. Indeed Prof. Garrè, of Bonn, has written in the *Deutsch. Medic. Wochens.* an article on the subject of "Transplantation of Blood Vessels and Organs," where he passes a review of all that has been accomplished so far by him and his assistants. He remarks that the first steps were that of the repairing of lateral wounds in the coats of veins and arteries. Then came the suture of blood vessels end to end; but now the move is to go further on.

Loss of substance in a blood vessel is replaced by portions of another. In the beginning it was a piece of artery for another artery. That piece could be kept for one or two hours in a physiological solution, and as if that was not enough, now that segment of blood vessel was kept for weeks in an aseptic liquid at 0° C. temperature. When these arterial graftings are made, once the circulation re-established, the vasa vasorum is filled with blood

and the transplanted segment resumes its own coloration. Heteroplastic arterial graftings which at first failed were finally successful.

Portions of arteries were replaced by venous ones, the permeability was preserved. There was no vascular dilatation and the venous portion took the characters of the artery, in becoming thicker and stronger.

Organ transplantations were tried with the thyroid and the spleen. With the thyroid, as it proved very difficult to suture the so-small thyroid vessels of a dog, the entire thyroid with a portion of the carotid were taken off and the whole transplanted upon the same animal or on another of the same species. The former was a success, the second a failure. The functions of the replaced thyroid were perfect and when it was removed for good after a first recovery, the animal died with all the symptoms of thyroid insufficiency. Garrè then reviews the success of Carrel with kidneys. The transplantation of a large piece of intestine with suture of the mesenteric artery have so far proved failures.



RETROSPECTIVE ECHOES OF THE TUBERCULOSIS CONGRESS IN WASHINGTON.—Veterinarians, who after the great gathering of the A. V. M. A., took an extra vacation, went to Washington and attended to the International Congress on Tuberculosis, had a good opportunity to take in all that had been prepared for the occasion by the Committee of Arrangements and could listen in every section to the papers that were presented and also to the discussions. There was so much to hear, so great and numerous were the attractions, so world-wide known were many of the speakers that to see, hear and profit of every opportunity was rather an undertaking; specially if to all that had to be added the receptions, the excursions and the visits to the exhibition. And yet many of our friends went from Philadelphia to Washington. Section VII. was one of their great attractions. It was the Veterinary Section. They who did go and those who did not visit

Washington have read the concise but excellent report that was published in the REVIEW in its issue of November, 1908, and there have found a very satisfactory proof that veterinarians did not remain indifferent to the great problems of tuberculosis. Far from it, as by their number, the valuable communications they made, the discussions they took part in, and the large attendance that was present at the seatings of their section—everything showed that it was truly a question in which all the members of that great science, Sanitary Medicine, were united and that human physicians and veterinarians were working hand in hand.

But with all that, there must have been something missing. It must have appeared to all that there was an absent link in the chain of all the events that took place in Washington between September 28th and October 12th of that year. This has just been filled; the work is completed. The greatest consecration has come from Washington. The printed *proceedings* have just been issued, and those who are entitled to them by their membership can now complete their visit and refresh their memory.

* * *

These proceedings are a monument of literature, and it is now by their examination that one can conceive an idea of the enormous extent of the questions, of the immense field that the problem covers and of the varieties of points that are related to it. The proceedings are contained in six volumes and they cover nearly 5,000 pages of closely printed matter, with illustrations in many instances. The space allowed in this chronicle and the magnitude of the work will not permit of a detailed analysis. However, let me mention the arrangement and contents of each volume as a means for special references.

The first volume is divided in two parts. The first gives the work of the first and second sections under the titles of Pathology and Bacteriology, Opsonic Index, Conjunctival and Cutaneous Tuberculin Reactions, Serum Diagnosis. The second part which completes the work of the second section treats of Clinical Study

and Therapy of Tuberculosis, Sanatoria, Hospitals and Dispensaries. Volume II. contains section third, Surgery and Orthopedy, and section fourth Tuberculosis of Children.

In Volume III. is found the work done in section five with Hygienic, Social, Industrial and Economical Aspects of Tuberculosis. Volume IV. is also in two parts. In the first is the work of section six with State and Municipal Control of Tuberculosis. In the second part is section seven, with Tuberculosis in Animals and Its Relations to Man.

Volume V., completing the entire official work, relates to Generalities, Opening and Closing Ceremonies, Report of the General Secretary, the Exhibition and the Awards, Officers, Committees and Members. This volume is illustrated with an excellent likeness of the President of the Congress, Theodore Roosevelt.

Volume VI. contains the series of public lectures specially prepared for the Congress. It is edited by the General Secretary and printed as a supplement to the transactions of the Congress. These are *grosso modo* what the contents of the proceedings are.

* * *

While in the article published here in November, 1908, a very good notice was given of the part taken by veterinarians in the work of section seven, and while I cannot give an analysis of all that our profession contributed, I must, however, notice it by a more detailed résumé, and do more justice to the American veterinarians who raised their voices at the meetings of that section.

"Tuberculosis in Animals and Its Relations to Man" was a sufficient heading to bring forward some of our best men. And if at those seatings voices from the old world, as those of Arloing, Bang, Fibiger, Koch and others were heard, many of our confrères did also honor to their profession and have shown that likewise the new world had workers in the good cause.

In part second of Volume IV. papers will be found by Dr. A.

D. Melvin on the "Economic Importance of Tuberculosis of Food-producing Animals; on "Economics as a Positive Factor in the Dissemination of Tuberculosis in Animals," by Dr. O. E. Dyson, of Chicago; on "Bovine Tuberculosis in Louisiana and Some Other Southern States," by Prof. W. H. Dalrymple; on "Dissemination of Tuberculosis Among Animals in Alabama," by Dr. C. A. Cary; on the "Control of Tuberculosis in Domestic Animals in Pennsylvania," by Dr. L. A. Klein; on "Bovine Tuberculosis under Range Condition," by Dr. M. E. Knowles, of Montana; on "Tuberculosis in Range Cattle in California," by Dr. G. S. Baker; on "Tuberculosis in Wild Animals in Captivity," by Dr. W. Reid Blair, of New York; on the "Occurrence and Significance of Tubercle Bacilli in the Feces of Tuberculous Cattle," by Dr. E. C. Schroeder, of Washington; on "Bovine Tuberculosis," by Drs. S. Stewart and A. T. Kinsley, of Kansas; on a "Review of Recent Investigations on Tuberculosis Conducted by the Bureau of Animal Industry," by Drs. J. R. Mohler and H. J. Washburn, of Washington; on the "Intertransmissibility of Tuberculosis," by C. F. Dawson, M.D., D.V.S., of Newark; on "Infection of Swine from Tuberculous Cattle," by Dr. A. W. Bitting, of Purdue University; on "Tuberculous Hogs as an Indication of Tuberculous Cattle," by Austin Peters, of Boston; a "Report of the Results of the Continued Injections of Tuberculin upon Tubercular Cattle," by Dr. S. B. Nelson; on the "Control of Tuberculosis," by Dr. J. G. Rutherford, of Ottawa; on the "History of the Agitation Against Bovine Tuberculosis in Massachusetts," by Austin Peters; on the "Use of Tuberculin in Controlling Tuberculosis in Herds," by Dr. C. J. Marshall; on the "Value of Tuberculosis in the Control of Tuberculous Herds," by Prof. V. A. Moore, of Cornell University; on the Precautionary Sanitary Legislation against Tuberculosis of Domestic Animals in the United States," by Dr. D. Arthur Hughes, of Chicago; and on the "Vaccination of Cattle Against Tuberculosis," by Prof. Leonard Pearson.

It seemed, however, that the monument elevated by the reproduction of the proceedings was incomplete. These needed a handsome crowning. The general secretary completed his work with the sixth volume, which contains the public lectures which were delivered in Washington, Philadelphia, Baltimore, New York and Boston.

In the preface of this volume, I read that it had been arranged to have these lectures delivered in every important city in the country, but that it was found beyond the power of the Central Committee to realize fully such a project, and as it was, it was found necessary to limit the delivery of the lectures as they are represented in that volume.

But how select and what a treat it is to read its contents. Read the headings: "Tuberculosis and its Prevention in Japan," by Dr. Shibasaburo Kitasato, of Tokio; "Tuberculosis of the Heart, of the Blood Vessels and Lymphatic Vessels," by Dr. Andres Martinez Vagas, of Barcelona; on "Social Life and Tuberculosis," by Prof. Gathhold Pannwitz, of Berlin; on the "Modern Procedures for the Early Diagnosis of Tuberculous Infection," by Prof. A. Calmette, of Lille; on the "Causes of the Past Decline in Tuberculosis and the Light Thrown by History in Preventive Measures for Immediate Future," by Dr. Arthur Newsholme, of London; on the "Evolution of the Treatment of Pulmonary Tuberculosis," by Dr. C. Theodore Williams, of London; on the "Biology of the Tubercle Bacillus," by Dr. A. Wladimiroff, of St. Petersburg; "One Hundred Years of Phthisiology—1808-1908," by Prof. Dr. L. Landouzy, of Paris; on "Collateral Tuberculous Inflammation," by Dr. N. Ph. Tendeloo, of Holland; on "Studies on Tuberculosis in Domestic Animals and What We May Learn from Them Regarding Human Tuberculosis," by Prof. Bernard Bang, of Copenhagen; on the "Fight Against Tuberculosis in Large Cities," "The Sanitary Dwelling as a Factor in the Prevention of Tuberculosis," "The City Anti-tuberculous," "Scientific Methods of Construction," by Dr. Maurice Letulle and Aug. Rey, of Paris; on the

"Anti-tuberculous Program," "Co-ordination of Preventive Measures," by Dr. R. W. Philip, of Edinburgh.

As can be seen by the above this volume is possibly the one in which the ordinary reader will be principally interested and the many illustrations by portraits of almost all the lecturers and those of others, men of celebrity on the subject of tuberculosis, will render the volume still more attractive. The first five volumes may find their places in the library of physicians and veterinarians, it is sure, but I am convinced that this last volume will be the one that will be met the most on the table of all, where it will be easy of access and can be readily looked into with interest.

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SUNDRY BIBLIOGRAPHICAL ITEMS.—The good firm, Alex. Eger, of Chicago, which is in the West *the* publishing house for veterinary works, has sent me a little book by Mr. G. Mayall, M. R.C.V.S. The title of it is "Cows, Cow-houses and Milk." Yes, all that? Enough we should suppose for quite a large volume, as no doubt every one of the three subjects command much matter of interest and yet all of them have been treated in just 99 pages; which were found sufficient for the author and filled the 21 chapters of the contents. There are also 16 plates, which, I think, are very good pictures of picked up choice animals. I see the price is marked one dollar.

I have also the *Agricultural Journal of Cape of Good Hope*; the *Quarterly Bulletin* from the Chicago Veterinary College for December, 1909; then *Bulletin* 39 of the Department of Agriculture; the *Index Catalogue of Medical and Veterinary Zoology*, Part 24 and 25, by Ch. Wardell Stiles, Ph.D., and Albert Hassall, M. R. C. V. S., and to close the list, two farmers' bulletins from the Bureau of Animal Industry, No. 378, on the "Methods of Exterminating the Texas Fever Ticks," by H. W. Graybill, and No. 379, on "Hog Cholera," by M. Dorset, M.D.

A. L.

ARMY VETERINARY BILL.

Realizing the great rejoicing that will be felt throughout the entire country, over the passage by the Senate Committee on Military Affairs (after a slight amendment) of bill S. 1692 to increase the efficiency of the veterinary service in the United States army, and of the appreciation that every veterinarian will feel toward the senators that championed the cause of veterinary medicine so ably and at such an opportune time, we have determined to publish the following from the *Army and Navy Register* of March 12th, even though Prof. Schwarzkopf has presented most of the facts in the Army Veterinary Department on page 65 of this issue of the REVIEW, and has there given the remarks of Senator Gallinger, which form a *part* of the following report:

VETERINARY SERVICE OF THE ARMY.

“The Senate Committee on Military Affairs on March 7 reported the bill (S. 1692) to increase the efficiency of the veterinary service of the army. It passed that body on March 9, amended by striking out the word ‘mounted’ wherever it occurred in the original bill.

The former Secretary of War, Senator Root, asked the chairman of the committee, Senator Warren, about promotions, particularly what rank was open to the veterinarian.

Mr. Warren—In one sense it gives no rank as such to them. It gives the pay and allowances of a second lieutenant for the first ten years, and after that and with a proper examination the pay, and so forth, of a first lieutenant. The bill provides for taking in the old veterinarians or contract veterinary surgeons and employees after passing proper examination—a few of the oldest ones without examination. As to the new class admitted, the bill provides the ages at which they shall be admitted; that they must be graduates of a veterinary college; that they must pass a prescribed army examination; that they must have served

ten years as second lieutenants before being promoted to first lieutenants, and they go no higher than first lieutenant during their service.

Mr. Root—The senator is satisfied, I presume, that the expression: "All veterinarians so appointed shall be on the same footing as that of commissioned officers of the army in respect to tenure of appointment, retirement, pensions, increase of pay" is so limited by the specific provisions of the bill that it can not apply to increase in rank?

Mr. Warren—I will say to the senator I have depended upon the War Department, and that is the language, as I understand it, approved by the Secretaries of War who succeeded the senator from New York. I have assumed, and I think from the language that it does, that it provides what I have said of it as to pay, increase of pay, and tenure of office—that is, the length of office retirement, pension, and allowances.

Mr. Page—I should like to ask the senator from Wyoming if this adds another line of those who are to be retired on half pay, or is the old law in regard to this matter simply re-enacted?

Mr. Warren—Mr. President, this is the condition: Formerly, when we had but few regiments of cavalry, but a small artillery force, and the days of horse doctors, bleeding, condition powders, and so forth, rather than regular veterinary surgeons, we employed men as employees, to be hired and discharged at will. This was unsatisfactory and most expensive in the losses of horse and mule stock. Some years ago, I should say perhaps fifteen, possibly ten, we provided for an examination of the force of men that were then employed, and provided that those who passed the examination should become second lieutenants, so far as concerns the pay, and so forth, exactly as this bill provides; that the others should remain employees.

This bill goes a little further. It provides—and it is a matter of only 42 men altogether proposed for the entire veterinary force for an expense, in addition to the present expense, of not to ex-

ceed \$2,700 per annum until after ten years shall have expired for the second lieutenants, when there will be more of them, of course, as first lieutenants than there are now.

But when the change is made it does away with the contract surgeons and the necessity for contract surgeons and employees, and substitutes a regular corps, which, after providing for the present force, is to be only recruited from young men under 27 years of age, who have been graduated from some reputable veterinary college and who shall be examined and pass under the army requirements. These, then, enter upon the service and serve ten years as second lieutenants, and then, after another successful examination, may be promoted and receive the pay of first lieutenants, retiring finally as first or second lieutenants, as the case may be.

Mr. Gallinger—The senator from Wyoming is aware, but it is well enough to put it in the *Record*, that the requirements of veterinary colleges to-day are quite as exacting as those of our best medical colleges. These men have to go through a curriculum of the same length, studying substantially the same subjects, in addition to which they get, of course, instruction in the treatment of animals particularly. But when a man is graduated from a veterinary college to-day he has given as much time and as much money to acquire his education as a young man who is graduated from one of our very best medical colleges.

Mr. Warren—And with the number of horses and the number of mules employed now in the army, the salary of these men is a mere bagatelle compared with the losses that may occur unless the army has a competent force of medical men to attend the animals.

Mr. Page—The only point I wish to raise is whether we are placing upon the retired list a large number of men who have acted as veterinarians and whom this bill proposes to pension.

Mr. Warren—Now, I see what the senator is probably driving at. This bill places no one upon the retired list or "pension

roll," as the senator terms it, except he shall arrive at the proper age and shall have done the proper service, with the exception of two men, one of whom is now 74 or 75 years old and the other 69 to 71. One has served nearly fifty years, the other has served just a little more or less than forty years. They are kept in the service as hired men because of their very valuable services in passing upon purchases of horses. The department wishes to retain them in that service, and the bill provides that these two may be retired. Undoubtedly these two would be immediately called back into active service under the law on account of their ripe and varied experience, so valuable in assisting our purchasing officers. * * *

Mr. Clay—Can the senator give any idea as to how much annual expense it will add to the expenditures of the War Department? I mean not only considering those who will avail themselves of the benefits of this act, but appointments that may be made hereafter, about what additional expense annually will be entailed upon the government of the United States.

Mr. Warren—We have a computation, over the signature of Mr. Taft, as Secretary of War, in which he states that if all the veterinarians having more than ten years' service and the additional veterinarians be appointed under the proposed bill, the increased annual expense would be not to exceed \$2,700. The only further expense would arise from the increased pay of such veterinarians as would become entitled to it after ten years' service. This bill makes them then first lieutenants, which rank they did not have before."

Giving space to the above report had for its object, however, not *alone* that of pleasing the senses of REVIEW readers in contemplation of the truths that Senators Gallinger, Warren and others gave expression to, but also of placing the veterinarians throughout the country in possession of the facts as they are, and giving them an opportunity of calling the attention of their representatives in Congress to the merits of the bill and urging upon them the importance of its passage.

ORIGINAL ARTICLES.

ROARING.

By C. A. CARY, B.S., D.V.M., AUBURN, ALA.

The real nature of roaring has not been known many years. The past three decades almost covers the real known history of roarers. The symptoms, methods of diagnosis and treatment have been changed and revised from time to time. The real cause is still unknown. We say the recurrent nerve paralysis and fail to find the cause of the nerve paralysis in many cases. We may find tumors pressing on nerves, injured nerves and a flattened left recurrent nerve where it passes around the arch of the aorta, but so far we are not satisfied with the explanations.

Diagnostic symptoms are few. Roaring on inspiration when standing still, walking, trotting, galloping and when pulling. Some cases will choke down with moderate or severe exercise and pulling. I have seen a few cases choke down when starting to drink water. In my experience "chokers" are more frequently found in mules than in horses. Many cases can be made to roar while standing by pressing the left (paralyzed arytenoid) inward and downward with the finger. Usually the arytenoid on the side of the paralysis lies farther away from the upper border of the thyroid and drops slightly downward and inward. This makes or leaves a notch-like place that can readily be felt by the finger (Williams).

DIFFERENTIAL DIAGNOSIS.—It must be distinguished from roaring caused by pressure of abscesses, tumors, edemas, phlegmons and enlarged thyroids and lymph glands upon the larynx. It must be separated from polypi or pedunculated tumors in

larynx, trachea and nares and collapse of tracheal cartilages. The hand may be inserted into the pharynx and locate tumors; laryngotomy can be done on the standing horse and in case no paralysis is observed, the fingers may be passed up into the pharynx in search of tumors.

OPERATIVE TREATMENT.—It seems that the first form of operative treatment was simple tracheotomy. While this rarely, if ever, cured a true case of roaring, it did restore the animal to a working condition.

The next operation that came into use was the extirpation of the arytenoid. This also proved a failure. Probably Dr. L. A. Merrillat's arytenoideraphy came next in the order of operations. This usually gave negative results. Doctor Anderson, of Nebraska, clips off the infero-posterior end of the arytenoid and the vocal cord. He claims good results, but I have not seen printed records of his results. Dr. W. L. Williams originated the method of removing the mucosa from the laryngeal ventricle on the paralyzed side of the larynx. He at one time employed tracheotomy, cut the cricoid and later sawed in two the thyroid at median line. Lately he has advised me that he will cut only the thyro-cricoid ligament and remove the mucosa of the ventricle. Until within the last two years nearly all operators have used a general anæsthetic. Now it is rarely used and tracheotomy is avoided.

Dr. M. H. McKillip opens the larynx by cutting the thyro-cricoid ligament and sawing through the thyroid in the median line. Then he uses a forceps that cuts out a V-shaped piece cutting through the internal wall of the ventricle and the mucosa. One jaw of the forceps is pushed into the ventricle, the other jaw of the forceps is on the outside of the ventricle; then pressure on the handles bring the two jaws together and this cuts out the V-shaped mucosa in the internal wall of the ventricle. The two borders of the wound are brought together by stitches. When healing occurs tension is produced on the arytenoid and the arytenoid is pulled to the side of the larynx. This operation will not obliterate the ventricle and prevent its catching inspired air. Nor will it pull the arytenoid as close to the side of the larynx

and fix it as will the scar tissue formed after removing the mucosa from the ventricle.

As can be observed by reading the report of cases in this article, I have operated by Merrillat's method and have followed Williams' operation.

Instruments.—One or two sharp scalpels; one probe-pointed bistoury; one pair 5 to 7 inches long sharp pointed curved or flat scissors; one or two pairs rather broad (one-fourth inch) jawed forceps—plug V forceps; two to four cotton or sponge holders for sponging out larynx; retractors, preferably self-retaining retractors, smaller but similar to human laparotomy self-retaining retractors.

The horse should not be fed or given water for twelve to twenty-four hours before the operation. It is better and safer to cast the animal on the ground or a grass plot where the ground surface is slightly inclined. If ground is dusty sprinkle freely with water to lay dust. Cast the horse, tie the limbs in flexed position, roll animal on its back or into a hollow trench on his back. Animal should be on its back with head extended down the incline. Few sacks filled with hay, excelsior or cotton placed along the side of the body of the horse, and one to two helpers on each side, will easily hold the animal on his back. The head should be enclosed in a good strong halter having no throat latch. It will require one attendant on each side to hold the head extended and in straight line with the neck; the attendants on each side hold the nose-piece of the halter with one hand and the ear with the other.

The skin over the larynx is now washed and shaved and disinfected. Cut through the skin, the sterno-thyro-hyoideus, an opening 4 to 5 inches long; wipe away and check hemorrhage; cut into larynx in median line between cricoid and thyroid through the crico-thyroid ligament and mucosa. Avoid cutting the cricoid. Introduce retractors just in front of cricoid extend and fix retractors. The cricoid may be pulled backward with a small tenaculum-like retractor. As per Williams directions grasp the vocal cord and mucosa just at outer border of ventricle on

paralyzed side with plug V forceps and with scissors cut mucosa out of the entire ventricle. Now grasp the balance of the vocal cord and cut it out up to the thyroid. This Williams does not mention, but he may cut out the rest of the vocal cord. I often cut out the other vocal cord so as to give more space for air to enter. I also cut out an elliptical piece of mucosa (one-fourth to one-half inch wide and one-half to one inch long) posterior to and parallel to the posterior border of the paralyzed arytenoid and sometimes I cut out a small piece of mucosa between the paralyzed arytenoid and the base of the epiglottis. The reason for cutting out the mucosa of the ventricle is to obliterate the ventricle and prevent its catching inspired air and pushing the vocal cord and arytenoid out into the air current. Also to permit the cicatrix to draw the arytenoid back to the side of the larynx and fix it. The removal of the piece of mucosa posterior to the arytenoid and the piece at the base of the epiglottis are made also for producing cicatrices that pull the arytenoid to the side of the larynx and fix it there. I always cut out all of the paralyzed vocal cord because in cutting the mucosa of the ventricle I remove part of the vocal cord and the remnant is liable to leave a pointed or ragged edge. Moreover, its removal gives more space in the lumen. The right vocal cord is also removed to give more space.

I am of the opinion that left side paralysis appears first and right side paralysis sometimes (more frequently than we know) gradually appears after we operate for left side paralysis.

The handling of the animal after the operation is second in importance to the operation. Above all things the horse or mule should be kept out in open air in a lot or preferably in a pasture. For the first few days the feed should be soft and it would be safest to feed freshly cooked bran, shorts, ground corn or oats. No hay should be given for at least one week after the operation. All feed and water should be given in box or bucket placed on the ground. Grazing grass should not be permitted for a few hours after the operation; thereafter grass may be the only food. The wound is washed once or twice daily, only on the outside;

no interference with the internal laryngeal wounds—especially do not push sponges, cotton, finger or any kind of swab into the larynx. The less irritation the better. Steaming with hot water



FIG. 1. RIGHT HALF OF LARYNX OF HORSE.

C is the cross section of bezel of cricoid cartilage.

c is the cross section of the small part of the cricoid cartilage.

r is cross section of the first ring of the trachea.

E is a median vertical section of the epiglottis.

Th is a median cross section of the thyroid cartilage.

ra is the right arytenoid, upper part.

V is the right vocal cord extending from near *A* (its posterior attachment to the arytenoid) to *Th*, its anterior end or attachment to the thyroid.

A to *V* is that part of the vocal cord grasped by the forceps when starting to cut out the mucosa of the ventricle.

VE is a little above the opening of the ventricle. The opening is between *VE* and *A*.

A is really a part of the right arytenoid.

Ma is a piece of white paper covering the mucosa posterior to right arytenoid, and is the place where I cut out an elliptical piece of mucosa.

at covers the mucosa between the arytenoid and epiglottis, and is the place where I cut out a small piece of mucosa.

and creolin once or twice a day is helpful in the way of moistening the discharge and may act to some extent as an antiseptic. Upon the second or third day after the operation, the mucosa of the larynx and the peri-laryngeal tissues may become edematous

and produce dyspnea or sometimes "choking down." Pressing open the lips of the laryngeal wound will give instant relief. Adjust in the laryngeal opening a small trachea tube, having an elliptical cross section and a one-way curve. I find that steaming two times daily relieves this engorged condition or edema rapidly and safely. This tube if small and properly made can be inserted without cutting the cricoid. It should be removed for cleaning and also to test the ability of the horse to breathe without it; and, as soon as the animal can get along without it, remove it.

All severe or vigorous exercise should be avoided for at least six months after the operation. I have known cases to improve for twelve to eighteen months after the operation, and all cases make a safe and better recovery when given only slow and moderate exercise regularly every day after the external wound in the larynx heals. If the animal is driven or saddled, the head should not be checked too high nor pulled backward and downward producing pressure on the larynx before complete recovery.

My experience leads me to believe that the failures that have been attributed to collapse of the tracheal rings in tracheotomy and collapse of the cricoid are not always due to such changes, but rather to defective operations.

Case 1.—Black mule 12 years old; bad roarer; choked down at times when pulling.

First Operation.—Tracheotomy by cutting two rings; cast; anæsthetized; larynx opened by going through crico-thyroid ligament and cutting cricoid; left side completely paralyzed; removed left vocal cord; put one stitch around left arytenoid according to Merrillat. Three months after healing of all wounds, mule was no better; still choked down at times.

Second Operation.—Tracheotomy; cast; anæsthetic; opened the larynx as before. The cricoid cartilage had united without collapse and so had the rings of the trachea. The wounds made by cutting out the left vocal cord and stitching back the arytenoid had healed, leaving smooth surfaces, but the left arytenoid was still motile. As the right arytenoid moved over toward the left

excessively, I decided to remove the right vocal cord and cut out an elliptical piece of mucosa posterior to the right arytenoid. After cutting out the right vocal cord and removing an elliptical piece of mucosa, I stitched back the right arytenoid according to Merrilatt. I also cut out an elliptical piece of mucosa posterior to the left arytenoid. Recovery from the operation took place in three weeks. For two or three months this mule made some noise, but she worked on a farm for two years and another year as a delivery mule. Have not later history.

Case 2.—Black mule 7 years old; chokes when pulling; tracheotomy; cast; anæsthetic; cut cricoid and crico-thyroid ligament; complete left side paralysis; excised left vocal cord and stitched back left arytenoid as per Merrilat. Recovery from operation in three weeks. One year later mule no better.

Case 3.—Mule 6 years old; choked down at times when pulling and when driven rapidly; put in tracheotomy tube and mule worked with tube in place for one or two months when tube was removed and mule never choked down thereafter during the next two years. This mule must have had some temporary cause for choking, which cause was removed by natural processes while tube was in place.

Case 4.—Bay gelding 9 years old, weight 1,100 pounds; Kentucky bred driving horse; produced a loud coarse roar when trotted short distance or driven up hill; trachea tube inserted and kept in place for three weeks; tube removed. Roaring same as previous to insertion of tube.

Case 5.—Bay mule 10 years old. Owner claimed mule choked with slight exercise. A trotting test just before operation made mule roar very badly, but mule did not choke down; trachea tube inserted. Mule cast and before the one loose hind limb could be caught, mule died. In casting, mule struggled vigorously, but did not suffocate for want of air, since trachea tube was kept in place. Post-mortem revealed inferior cervical and inferior thoracic glands enlarged; pleural cavity one-fourth to one-third full of serum and a little serum in pericardium.

Case 6.—Sorrel mare mule 10 years old, roars loudly with moderate exercise and chokes down at times when pulling wagon or plowing; tracheotomy (cut 2 rings); cast; general anæsthetic; laryngotomy (cut cricoid); complete left side paralysis; removed both vocal cords and an elliptical piece of mucosa posterior to left arytenoid; removed trachea tube in one week. Mule taken home in four weeks. History followed during next three years. Mule did all kinds of farm work and never choked or roared thereafter.

Case 7.—Black gelding 12 years old, weight 1,150 pounds; had been a roarer for more than a year; a scar and partially collapsed rings evidenced a previous tracheotomy; tracheotomy at a new place (cut two rings); cast; general anæsthetic; laryngotomy cutting cricoid; complete paralysis of left side; removed mucosa from left laryngeal ventricle; cut away all of left vocal cord and an elliptical piece of mucosa posterior to the left arytenoid. In four weeks all parts had apparently healed. In short driving test horse made some noise. Horse was taken home and driven and continued to improve for one year, when he completely recovered.

Case 8.—Sorrel gelding, 12 years old; had been a bad roarer for eight months; presented shifting lameness and some signs of osteo-porosis; tracheotomy (cut 2 rings); cast; general anæsthetic; laryngotomy (cut cricoid); both sides completely paralyzed; no movement of arytenoids except during act of swallowing; removed right and left vocal cords; excised an elliptical piece of mucosa posterior to both arytenoids; removed mucosa lining left laryngeal ventricle. Horse left hospital one month after operation and at that time could not be made to blow by a trotting test. Two months after operation I inspected horse and found it very lame and stiff; facial bones enlarged (osteo-porosis), and the horse would blow with slight exercise. The cricoid and the two cut tracheal rings had partially collapsed. Owner disposed of horse to a negro farmer, who has since made two cotton crops with the horse, and while I have not examined the horse, yet the owner says he has "good wind."

Case 9.—Very fat, chunky mule, 8 years old; had been a roarer for five months; must be pulled hard or galloped to produce roaring; tracheotomy; cast; no anæsthetic; laryngotomy



FIG. 2. LEFT HALF OF LARYNX OF HORSE IMMEDIATELY AFTER OPERATION FOR ROARING.

C is bezel of cricoid cartilage.

c is smallest part of cricoid cartilage.

r is first ring of trachea.

E is epiglottis.

A is about the middle of the left arytenoid.

T is the thyroid cartilage.

VO is just below place where left vocal cord has been cut away.

Ve is in front of left ventricle cavity after mucosa lining of ventricle has been removed. Above *Ve* is a space where piece of mucosa was removed; it is between the arytenoid and epiglottis.

M is just back of place where an elliptical piece of mucosa has been cut away. This is behind the posterior border of the left arytenoid.

Looking at the photograph one can readily see how the cicatrices forming after the wounds heal will draw the arytenoid back to the side of the larynx and that the cavity of the ventricle will be obliterated.

(cut cricoid); left arytenoid cartilage almost still but not completely quiet (partial paralysis); right arytenoid moved over far beyond the median line; mucosa removed from left laryngeal ventricle which was very small; cut away both vocal cords and an

elliptical piece of mucosa $\frac{1}{2}$ inch long and $\frac{1}{4}$ inch broad posterior to left arytenoid; removed trachea tube in one week and in two weeks mule went home, traveling about thirty miles. It was a mistake to exercise mule on such a long drive so soon after operation. Six months after operation mule was reported to roar as bad as ever. I have been unable to get a later history.

Case 10.—Black gelding, 15 years old; roars very vigorously; sometimes chokes down; had been roaring for one year or more; tracheotomy had been done at some previous date. Operation—Tracheotomy (cut two cartilages) in a new place; cast; no anæsthetic; laryngotomy (cut cricoid); complete left side paralysis; removed right and left vocal cords and mucosa from left ventricle and a piece of mucosa posterior to left arytenoid. At some time during operation horse fractured or crushed the body of a dorsal vertebra and in struggling to rise he ruptured the diaphragm. The above conditions were found on post mortem. The recurrent on left side was traced back to place where tracheotomy had been previously done and the nerve was lost at that place.

Case 11.—Brown mule, 15 years old; roaring for several months; roaring brought out distinctly on exercises; tracheotomy (cut two cartilages); no anæsthetic; laryngotomy (cut cricoid); left side completely paralyzed; cut out both vocal cords; the mucosa of the left ventricle; a piece of mucosa posterior to the left arytenoid and a piece of mucosa anterior to the supero-posterior end of left arytenoid, between this part of the arytenoid and epiglottis; had profuse hemorrhage. Mule was steamed daily with small quantity of creolin in one to two gallons of hot water; washed outside with two to five per cent. creolin solution; fed soft food (dampened bran, shorts and scalded oats) from box on ground; left out doors in small pasture lot where he could graze; fed little or no hay and all food and water was taken from the ground. Mule made rapid recovery from operation and in four weeks went home; could not be forced to roar at time he was taken home. Mule has worked for two years at all kinds of farm work and has never showed any signs of roaring.

Case 12.—Blind brown mule, 14 years old; large and poor; would weigh if fat 1,300 pounds; roars when standing; history unknown. Operation—No tracheotomy; no anæsthetic; cast; laryngotomy without cutting cricoid; complete left side paralysis; the mucosa on the left arytenoid appeared rough and thickened; removed mucosa of left ventricle, the right and left vocal cords and a piece of mucosa between the base of the epiglottis and left arytenoid; hemorrhage was profuse; time of operation, twenty minutes; mule was apparently hungry and began to eat grass immediately after regaining his feet. This kept the blood from the wounds gravitating into the pharynx. This mule was left in small pasture lot and permitted to live almost exclusively on pasture grass. The external laryngeal wound was washed daily. The mule for four days had some difficulty in breathing because the laryngeal mucosa became swollen, but the mule made good recovery in twenty days; mule was then turned into a large pasture. The operation was done on May 29th and on July 10th mule, being totally blind, fell into a deep ditch, landing on his back, where he remained for twenty-four hours before discovered; when pulled out was so nearly dead that he was destroyed. Being absent, one of the veterinary students failed to trace the left vagus and recurrent, but he removed the larynx. The larynx shows perfectly smooth healing of all the places in mucosa, and there was left a very small pocket where the left ventricle mucosa had been removed. This pocket would hold about 1 c. c. and was smooth. The left arytenoid was pulled back to the side of the larynx, giving ample room for passage of air.

Case 13.—Bay gelding 6 years old, weight 1,000 pounds; shipped from East St. Louis to Alabama; had a mild attack of influenza; 30 days later developed roaring. This horse was first operated on by Doctors Jackson and McGuire, of Birmingham, Ala. In this operation a portion of the left arytenoid was removed. The external laryngeal wound healed, but the roaring did not improve. Some time later I saw the horse and he could not get along with a trachea tube. When I operated on the horse, a trachea tube was already in place; horse was cast; no anæs-

thetic; laryngotomy (cut cricoid at same place as previously cut). The remnant of left arytenoid had not healed over and budding granulation growths were surrounding the exposed necrosing cartilage. The granulations were clipped off and the surface of the necrosing cartilage removed. The mucosa of the left laryngeal ventricle was cut out. The left and right vocal cords removed. Doctor Jackson reported some two months after the operation that horse was no better.

Case 14.—Black gelding, 8 years old; shipped from East St. Louis to Alabama; was a roarer in East St. Louis; roars very badly when driven; in fact, would choke down if pushed for six blocks; no tracheotomy; no anæsthetic; cast; laryngotomy without cutting cricoid; complete left side paralyzed; right side partially paralyzed; removed mucosa of left ventricle, both vocal cords, also a piece of mucosa posterior to left arytenoid and a piece of mucosa at base of epiglottis between left arytenoid and epiglottis. The day following the operation larynx badly swollen; horse breathing with difficulty; cut cricoid and inserted curved trachea tube. This tube was retained in place much of the time for four days; recovery from the operation in twenty days, was kept in small pasture for six weeks and then sent home. Owner drove horse in a walk every day for a few weeks and then sent him to the pasture. Operation was done April 21st and the following August horse was taken from pasture and could not be made to roar by forced driving; was then sold, going to another state.

Case 15.—Bay gelding, 9 years old; history unknown; examination of trachea and larynx indicated that horse had been operated at some previous time; on exercise made a very rattling noise; cast without anæsthetic and without trachea tube; laryngotomy, cricoid had partially collapsed and was cut again. The left arytenoid had been completely removed; a few granulation buds and rough scar were present. During inspiration a long piece of tissue was drawn down into the larynx and during expiration it was blown back into the pharynx. With long forceps this membrane was caught, pulled out as far as possible, and

clipped off with scissors. About one inch of the upper end of the epiglottis was clipped away with it, leaving the larynx with a large empty space where the arytenoid had been removed and a stub of an epiglottis. This horse was kept in small pasture for five weeks; fed soft feed from the ground. The external wound healed; the horse still coughed when eating and drinking and passed quite a lot of food and water back through the nasal passages. The horse was taken away by the owner in May, 1909, and January 1, 1910, was living and still coughing and blowing feed out through his nostrils. The strangest thing is that this horse had never developed a case of inhalation pneumonia.

Case 16.—Black mule 6 to 8 years old; had been troubled in breathing for weeks; sent to French and Jackson's Hospital in Birmingham, Ala; pronounced roarer by French and Jackson. I was invited to operate. Mule had casting harness on and stood in operating room breathing apparently normal. Doctor French advised tracheotomy, but I had operated on several without anæsthetic and without tracheotomy, hence I decided to operate without tracheotomy. In casting, the mule struggled vigorously and attendant was very slow in catching up and fastening loose legs. Mule showed signs of asphyxia and tracheotomy was performed, but mule died. Post-mortem—Small tumors had been removed, one on each side at base of neck, lower part on inside of point of scapulo-humeral angle. These proved to be extensions of sarcomatous tumors from anterior part of thorax. Anterior part of thorax in front of heart was filled with mass of sarcomatous tumors, and the remaining part of thorax or lung cavities were about one-half full of serum. Pressure of the tumors on the pneumogastrics and upon the recurrent laryngeal nerves must have caused the coaring. The limited breathing capacity and the obstructed laryngeal lumen caused the asphyxia. Very likely mule would have died with tracheotomy tube in place before mule was cast. An attempt to hurriedly trace the vagus and recurrent laryngeal was made and the nerves were lost in the mass of tumors. Possibly pressure of the tumors on the heart, blood

vessels and vagi nerves may have had something to do in causing the death.

Case 17.—Bay saddle horse 9 years old; shipped from East St. Louis as a roarer; roars with severe exercise in saddle and in harness; no tracheotomy; no anæsthetic; cast; laryngotomy (did not cut cricoid); complete left side paralysis; removed mucosa from left ventricle, cut out both vocal cords; recovery from external laryngeal wound in four weeks; horse kept in small pasture lot for nine weeks, at this time forced driving produced very little noise. Horse was taken home and it was reported owner drove horse too vigorously. Operation September 18th and the following January horse still roared. This horse had every indication of making a complete recovery when he left our hands.

Case 18.—Black male mule 7 years old; weight 1,300 pounds; had been used in dray at West Point, Ga.; exercise brought out the roaring very prominently; pressure of finger on left arytenoid produced roaring. The left arytenoid was readily pressed inward with finger. Mule was cast without tracheotomy and no anæsthetic was used. Laryngotomy without cutting cricoid; complete paralysis on left side; removed the mucosa of left ventricle, both vocal cords and a piece of mucosa posterior to left arytenoid. This mule's hind feet were pulled high upon the back and fixed to rings on the back band. During the operation mule struggled vigorously. Time, thirty minutes from beginning to end of casting and operation. Upon rising, mule acted exactly as if he had azoturia paralysis in hind limbs; rubbing, rest and a little walking exercise gave relief. Mule was left out in small pasture and the third night when it was quite cold and chilly, and the mule was down and unable to rise the next morning. He was raised by means of slings and in two hours the slings were removed and that was the last of the azoturia symptoms. Mule recovered in four weeks and could not be made to roar by prolonged trotting. Two months since the operation, and the mule is reported by owner as sound.

Case 19.—Standard bred mare 8 years old; shows some rheumatic loin lameness; roars when pushed for speed; cast without tracheotomy; no anæsthetic; opened larynx without cutting cricoid; partial paralysis of left side; removed the mucosa of left ventricle, both vocal cords and a piece of mucosa posterior to left arytenoid. Mare made a rapid recovery from operation and at present writing, two months after the operation, mare is reported as very much better and makes very slight noise when forced up hill. This mare will get better and finally entirely recover if not driven or worked too hard during the first six months after the operation.

Case 20.—Black mare mule 7 years old. This mule had changed owners some eight times during the past year on account of being a roarer. The mule choked on being driven up hill pulling a buggy with two persons in it. Cast without tracheotomy; no anæsthetic; opened larynx without cutting cricoid; found complete left side paralysis; removed mucosa from left ventricle, both vocal cords and elliptical piece of mucosa posterior to left arytenoid. This mule's hind legs were pulled high on back and not sufficiently flexed, and she struggled vigorously during operation and got up with difficulty and was partially paralyzed in both hind limbs for some hours after the operation. In course of a week this lameness disappeared. Mule recovered from operation in twenty days. At present (seven weeks after the operation) mule does not roar.

THE regular monthly business session of the B. A. I. Veterinary Inspectors' Association of Chicago was replaced with the third annual banquet of the association Saturday evening, March 12, 1910, at "The Saddle and Sirloin Club," in their beautiful new banquet hall, which was artistically decorated. Eighty-five banqueters were gathered at the festive board, who not only relished the elaborate menu, but also enjoyed the terse and instructive toasts and responses. The B. A. I. Sextette aided greatly to the evening's entertainment by rendering a few of their choicest selections.

LIP-AND-LEG ULCERATION OF SHEEP. *

THE WORK OF THE BUREAU OF ANIMAL INDUSTRY FOR THE SUPPRESSION OF LIP-AND-LEG ULCERATION OF SHEEP.

BY A. D. MELVIN, CHIEF OF THE BUREAU OF ANIMAL INDUSTRY.

For many years there have existed in the United States a group of diseases of an ulcerative nature affecting animals of various species and attacking various parts of the body. These affections, which have been known by such names as foot-rot, necrotic dermatitis (or inflammation of the skin), necrotic stomatitis (or sore mouth), and other terms, have been found by scientific investigation to be due to one and the same germ, known as the necrosis bacillus; consequently they have been grouped under the general designation of necrobacillosis, and may be considered as a single disease manifesting itself in various forms.

The Bureau of Animal Industry had occasion to study this disease as long ago as 1902, and during the period since that year it has made careful investigations and studies of various forms occurring in different species of animals. An article on foot-rot of sheep and another dealing in general with the necrosis bacillus were published in the Bureau's annual report for 1904, and a bulletin was issued in 1905 with special reference to the forms known as calf diphtheria and sore mouth in pigs. In 1906 an importation of Swiss goats was found affected with a disease which it was at first feared might be foot-and-mouth disease, but which proved on investigation to be necrobacillosis, and an opportunity was thus afforded for a study of the disease at that time.

Until recently the nature of the disease in the United States in most instances has been mild, but within the past year or two

* Presented at the recent convention of the National Wool Growers' Association at Ogden, Utah.

it has assumed a malignant form among sheep in Wyoming, Montana, and some of the other Western states, where it has especially affected the lips and legs of the animals (and in many cases the genital organs), and has received the name of lip-and-leg ulceration.

It is my purpose at this time to discuss the nature of the disease only in a general way, and to discuss more especially the situation in the Western states during the past year or more and the steps taken by the Bureau of Animal Industry to suppress the disease. The technical side of the subject is presented in an accompanying paper* by Dr. John R. Möhler, chief of the Pathological Division of the Bureau.

The first information received by the Department of Agriculture indicating the serious character that the disease had assumed among sheep in the Northwest was conveyed in a telegram of November 23, 1908, in which it was stated that there was a serious outbreak of what was called foot-and-mouth disease in three counties of Wyoming, and asking that the Bureau send an expert to make an investigation so that proper steps might be taken to deal with the trouble. This report, coming at a time when we were engaged in combating an outbreak of foot-and-mouth disease in the East, and when it was not known how far the contagion of that disease might have spread, caused grave apprehension that foot-and-mouth disease might have reached the range country of the West, where it would have been a much more difficult and serious problem. I therefore took immediate steps to have the disease in Wyoming investigated, and within a week reports had been received from two of our inspectors, Drs. R. H. Treacy and E. J. Cary, to the effect that the disease was of a necrotic nature and not foot-and-mouth disease. It is hardly necessary to add that this information was very gratifying and relieved the fear that had been felt.

It appeared, however, that the disease affecting sheep in Wyoming was really a serious matter, so a number of additional men were sent by the Bureau to examine flocks at different places and

*Will be published in the May issue of Review.

to make a careful and thorough examination and study of the disease. Large numbers of specimens were sent to the pathological laboratory at Washington and were there examined by scientific methods that could not be used in the field.

The result of these further investigations confirmed the diagnosis already made and left no doubt that the disease was a malignant form of necrobacillosis. Attention was then directed to the study of methods of treatment, and steps were taken to disseminate information as to the character of the disease and the measures that should be taken to cure it and prevent its spread.

In the early period of the outbreak the Department recommended that affected animals be segregated and given careful treatment by hand with proper disinfectants. This seemed to most sheep owners to be an impossible method of procedure, on account of the large number of animals affected and probably also because such treatment was so different from and so much more difficult than any method that they had ever before been obliged to use in handling their sheep. It should be understood that at this time there had been no work done looking to the treatment of large bands of sheep running upon the open range. The next expedient resorted to in this emergency was the dipping in an antiseptic solution of the exposed sheep and those but slightly affected, with the expectation that this might check the disease and cure these slight cases. This treatment, however, seems in many instances not to have met with the success that was expected of it, and to-day owners are returning to the hand treatment of all affected sheep, as originally proposed by the Bureau. The failure of dipping to give satisfactory results in all cases was probably because some sheep were actually infected before dipping and because in some cases the disease was contracted after dipping by the animals being placed in infected corrals, pens, or cars, or being driven over infected trails.

At first it was hoped that as the affected territory was limited, the outbreak might be suppressed by local measures without the necessity of resorting to federal quarantine. Furthermore, the Bureau at this time had not finished its work of eradicating foot-

and-mouth disease in the East and was in no position to spare either the men or the money to take up in a vigorous way the suppression of lip-and-leg ulceration in the West. As the time went on, however, and the malignant form of nebrobacillosis continued to spread, it was considered best to declare a federal quarantine on sheep in eight counties in Wyoming, and this was done by the Secretary of Agriculture on August 6, 1909, to take effect August 12. This action was taken only after conference with the authorities of Wyoming and other states, and after receiving requests from those officers and from numerous sheepmen that the Bureau do what it could to check and eradicate the disease.

During the month of August, while Secretary Wilson was on a trip of observation of the Department's work in the West, he was appealed to by some of the sheepmen at Rawlins, Wyo., and he directed that I confer with them later and render whatever assistance the Bureau could give in an effort to control and eradicate the disease. A meeting was therefore held at Cheyenne on August 30, which was attended by a large number of prominent sheep raisers, and by the governor, the state board of sheep commissioners, and representatives of the state wool growers' association, as well as by several representatives of the Bureau of Animal Industry. The situation was discussed very fully as far as it was understood at that time with reference to the best methods of combating the disease. At that time the Bureau representatives had not completed their investigations as to methods of treatment, which they had commenced only a few months before.

Following this conference another meeting was held, at which the state board of sheep commissioners, representatives of the state wool growers' association, and representatives of the Bureau of Animal Industry were present, and a draft of the Wyoming Order No. 29 was tentatively decided upon.

As a result of these meetings, and at the request of the sheep owners, the Bureau undertook to assist in carrying out the order requiring dipping and the hand treatment of affected sheep, which at that time was thought to be the most expeditious method of dealing with the disease.

The first federal quarantine order, which took effect August 12, prohibited the interstate movement from the quarantined area of sheep affected with lip-and-leg ulceration. It permitted the interstate shipment of exposed sheep to recognized slaughtering centers for immediate slaughter without dipping, but required the dipping of exposed sheep for interstate shipment for stocking or feeding purposes. Healthy unexposed sheep were allowed to be moved interstate from the quarantined area when accompanied by a certificate of inspection by the Bureau of Animal Industry. The quarantined area was slightly changed at the request of the Wyoming board by an amendment effective September 15.

On November 22 the terms of the quarantine were somewhat altered so as to provide for a reinspection in less than seven days after inspection and dipping, and if necessary a second dipping, of sheep not diseased, but which were a part of a diseased band, before they could be moved interstate for breeding purposes, and also to provide that the state or territorial officials should assume the responsibility of permitting exposed sheep to be moved without dipping for feeding purposes into their respective states or territories.

As is always the case in enforcing quarantine measures, some inconvenience and hardship were occasioned, and there has been objection on the part of sheep owners to the stringency of the measures applied. It is impossible to enforce a quarantine in such a way as to be effective in preventing the spread of a contagious disease and at the same time to avoid hardship to stock growers and shippers.

The shipping of exposed sheep to market centers for slaughter, and the occasional receipt at such places of sheep that had developed the disease en route, resulted in many instances in great loss to the owners on account of the low prices that they were obliged to accept.

The measures prescribed by the Department were made just as lenient as they could be, considering the nature of the disease, as the Department felt that it should not make its regulations un-

duly oppressive and should extend every facility to sheep owners for marketing their sheep consistent with the nature of the disease and with proper sanitary precautions.

In this matter the Bureau is standing between two conflicting interests. The sheep raisers in the infected area, on the one hand, wish to have their stock let out for marketing or feeding. The buyers and feeders in other parts of the country, on the other hand, want to be protected against the purchase of exposed sheep in which the disease afterwards develops. In this situation we have done our best to be fair to both sides. Nevertheless, complaints have been received from eastern feeders that the disease has broken out in sheep bought by them after having passed inspection, and the Bureau has been asked to make settlement for losses resulting therefrom.

The nature of the disease makes it impossible for even the most careful and expert inspector to detect the presence of the infection in all cases before it has manifested itself in actual lesions, and this fact was a strong reason for requiring not only the inspection, but the dipping of all exposed sheep, or sheep which, while apparently healthy, had formed part of diseased bands.

There has been some complaint on the part of sheep owners that Bureau inspectors have held up sheep which did not have lip-and-leg ulceration, but merely had sore mouths caused by frosted grass or the coarse, rough feed of winter. It is significant, however, that sore mouths have not only been observed in grazing sheep, but have also been found in suckling lambs before they had commenced to eat herbage of any sort.

It must be remembered that necrobacillosis in all its various forms, whether mild or virulent, is an infectious disease, caused by the same germ; and further, that it is also what is known as an inoculation disease; that is, the necrosis bacillus requires for its entrance into the body an impaired or broken tissue. The effect of frosted herbage, hard wiregrass, and other similar substances is to produce wounds into which the bacillus may enter and cause disease. When sheep are injured in this way and apparently have only the mild form of sore mouth, in territory

where the malignant form of the disease prevails and where the wounds are very likely to be infected with the germs, it is only a matter of a little time when the disease is likely to develop in them.

Reliable evidence has been obtained in a number of instances showing that the disease was undoubtedly contracted by healthy sheep from infected premises, and it is very probable that many outbreaks have been produced through infected trails, cars, loading chutes, etc.

With regard to the requirement of dipping, it may be said that the disinfection by dipping of sheep that have been exposed to a contagious disease of this kind before allowing them to be placed with healthy sheep is a requirement that is in entire accord with the best scientific knowledge regarding contagious diseases. The disinfection of such sheep is required for the same reason as the disinfection of harness, utensils, and equipment in a stable in which animals affected with a contagious disease have been kept; that is, even though certain animals are not actually affected with the disease, if they have been in contact with diseased animals or infected premises, they are likely to have the virus on their wool or on their bodies in the same manner that such virus might contaminate any inanimate object that had come in contact with diseased animals.

Bearing in mind the nature of the disease, the limited information regarding its extent, and all the facts which I have stated, it is difficult to understand how any more lenient method could have been adopted by the Department of Agriculture in dealing with the disease. If it is to be controlled in any effective manner it is essential that more or less stringent measures should be taken, and the Department has endeavored to make its requirements no more strict than necessary, and to permit the movement and marketing of sheep with just as little interference as possible, consistent with effective work. We have already had complaints of eastern buyers as before stated, that the disease was breaking out in sheep which had passed inspection.

An example of the damage caused by necrobacillosis in other species than sheep and also of the danger that would result from its spread is found in the case of the San Luis Valley of Colorado. Hog raising is an important and paying industry in that valley, but has been greatly interfered with by necrobacillosis, which has affected hogs there for several years. It seems likely that if the malignant form of necrobacillosis should become transferred to other sections where hog raising is extensive, such as the Middle West, the same disastrous results might follow.

If we are to succeed in controlling this disease, the efforts of the federal and state officers must be backed by the co-operation of the sheep raisers. If each individual flockmaster would apply effective treatment and cure the disease in his sheep and eradicate the contagion from his corrals, the disease could be sooner and more easily stamped out and the troublesome quarantine restrictions removed. Many owners have treated their sheep, but it is necessary that this should be more generally done. The disease yields to proper treatment in most cases, and effective methods of treatment have been prescribed by the Bureau of Animal Industry and by state veterinary officers. It is within the power of the sheep raisers, by cleaning up their flocks, to hasten greatly the time when the quarantine can be raised, and the Bureau earnestly desires the help and co-operation of all who are interested in bringing about that result.

Even in the case of the mild form of sore mouth as it occurs in lambs, it would be much better if the owners would keep these lambs on their ranges or premises until the disease has run its course and the lambs have become well. This would only require holding them for a few weeks longer, and they could then be sent to market in good condition and without any likelihood of being held up.

I want the stockmen of the country to realize that the object of the Bureau's work is to protect and benefit their industry, and that in all our work we always have this object plainly in view. We must look at the matter in a broad way, however, and consider the good of the live-stock industry throughout the country

as a whole. It is not to be thought for a moment that a progressive nation such as ours would permit an injurious and destructive contagious disease of live stock to spread all over the country just because effective measures for its control would entail some inconvenience and hardship on the stock raisers in a limited area.

But the object of our work is not solely to protect the sections of the country where the malignant form of the disease has not spread. The interests of the sheep raisers in the infected territory demand that the disease should be controlled; and while the process may be somewhat burdensome to them for a time, the ultimate result will be greatly to their benefit. So whether we view the subject in a broad way from the standpoint of the live-stock industry of the country as a whole, or from the narrower standpoint of the interests of certain limited sections, the work of quarantine and suppression of a contagious disease can only be regarded as beneficial in the end.

In endeavoring to control and eradicate contagious diseases of animals, however, the Bureau of Animal Industry always tries to proceed in such a way as to accomplish that result with the least possible disturbance and inconvenience to the movement and marketing of live stock. We endeavor to combine scientific knowledge with practical common sense. We are always willing to listen and learn, and are glad to confer with those engaged in the live-stock industry and to carry out their wishes so far as possible. It has been very gratifying indeed for me and my assistants to be able to meet with the wool growers and the various state sanitary officers and to discuss this subject from the different viewpoints. I trust that this discussion has resulted in all of us acquiring more information on this very important subject, and that this conference will be of benefit to the sheep industry.

CALIFORNIA, SEPTEMBER 6-7-8-9, 1910.

COCCIDIOSIS OF CATTLE AND HORSES.*

BY JOHN REICHEL, V.M.D., IN CHARGE OF THE LABORATORY OF THE PENNSYLVANIA STATE LIVE STOCK SANITARY BOARD.

In 1907 under the direction of Dr. Leonard Pearson, Chronic Bacterial Dysentery, or Johne's Disease, in cattle was discovered in Pennsylvania in the laboratory of the Pennsylvania State Live Stock Sanitary Board. Since then the disease has been found in other states. A study and some experimental work with Chronic Bacterial Dysentery has since then been a part of the work of the laboratory and all cattle reported with a chronic form of dysentery receive our attention.

Late in 1908, Dr. W. H. Ridge, of Trevoze, Pa., called our attention to a cow on a farm in Montgomery County in this state with all the symptoms of Chronic Bacterial Dysentery, and this cow was sent to the experimental farm of the State Live Stock Sanitary Board to take part in experiments with Chronic Bacterial Dysentery. This cow died within a short time and the clinical diagnosis of Chronic Bacterial Dysentery was not confirmed at autopsy and subsequent examinations in the laboratory of specimens. The cattle and later the other animals upon this farm in Montgomery County were separately examined, during the year 1909, including sixty-three cattle. Rectal scrapings were made of all of the cattle early in 1909 followed by the examination of the feces taken from the rectum of all the cattle again, the horses, goat and feces gathered from two of the chicken houses early in 1910. In all of the specimens collected, except in the feces from the chicken houses, bodies were found in the smears stained as for acid-fast bacilli, which varied from

* Read before the meeting of the Pennsylvania State Veterinary Medical Association of March 8, 1910, though previously announced at a meeting of the Keystone Veterinary Medical Association, February 8, 1910.

rounded to oval in shape, taking on the red stain. They appeared most abundant in the cattle, although several of the horses showed them in fairly large numbers in the feces. These same bodies were found in the specimens of the cow sent to the experimental farm in 1908, and in another sent from the same farm early in 1909 which also died, showing all the symptoms of Chronic Bacterial Dysentery, but in which no evidence of Chronic Bacterial Dysentery could be detected at autopsy and laboratory examination made. With the finding of these bodies in the feces of all cattle, horses and goat upon this farm, from which two cows died of a chronic dysentery and in which the same bodies were demonstrated in the feces and scrapings of the rectal mucous membrane, two adjacent farms were visited and rectal scrapings taken from six cows on one farm and five cows on the other. No such bodies were found in any of the eleven specimens.

Two calves kept in an enclosure upon the experimental farm of the State Live Stock Sanitary Board, in which the two cows were kept from the Montgomery County farm, were found to be the only two cattle of sixteen from which rectal scrapings were taken in January, 1910, to show these bodies. The fourteen cattle in which no bodies were found in the feces are kept a considerable distance from the enclosure in which the two calves, apparently contracted the infection under natural exposure. One of the calves was killed in January, 1910, to obtain fresh material, and the bodies already referred to were found in the feces and in the scrapings of the tips of the mucous membrane, which showed red foci resembling grossly the lesions seen in Chronic Bacterial Dysentery. No acid-fast bacilli were found. The small intestine showed an extensive enteritis, the mucous membrane aside from showing the tips of the irregular folds reddened, was covered with a gray slimy coat. Scrapings of the mucous membrane of the small intestine showed more of the bodies than the scrapings of the mucous membrane of the rectum. The mesenteric lymph glands showed red foci beneath the capsule, in which the bodies were demonstrated in small numbers in

the smears made. Sections of the rectum and small intestine show many of these bodies within the epithelial cells of the mucous membrane, in the largest numbers in the small intestine.

Unstained the bodies are seen rounded and oval in shape, 2.5 to 5 microns in size, of a definite outline, many having a double walled appearance. Inner structure can be seen, which is well brought out in those stained with iron-haemotoxylin. The shape, outline, inner structure and presence of the bodies in the epithelial cells is conclusive proof that they are coccides. They are smaller than the coccides (2.5 by 5 microns) that are known to infest cattle in foreign countries. It is believed that this coccidium is pathogenic for cattle and capable of producing a form of chronic dysentery. Although the coccides were found in the feces of the goat and horses on the infected farms, no symptoms have been observed in either goat or horses.

JUBILEE DINNER OF ALUMNI ASSOCIATION OF THE NEW YORK-AMERICAN VETERINARY COLLEGE.—If any graduate of the New York College of Veterinary Surgeons, the American Veterinary College, or the New York-American Veterinary College fails to receive a letter from the secretary from any cause, this notice is to inform him that there will be a meeting and jubilee dinner on Wednesday, April 20th. The meeting is called for 2 P. M. at 141 West Fifty-fourth street, and the dinner at 7 P. M., at Reissenweber's, Fifty-eighth street and The Circle (Eighth avenue), New York City. The number of years devoted to the teaching of veterinary medicine by these three schools (now one) aggregate practically a century, being 99 years in round numbers, and the features of this jubilee dinner will be such that no alumnus can afford to be absent. So as to facilitate the work of the dinner committee, it is suggested that you write at once to any member of the committee: Dr. W. C. Miller, 459 W. Forty-third street; Dr. Robert S. MacKellar, 351 W. Eleventh street, or Dr. Robert W. Ellis, 509 W. One Hundred and Fifty-second street, New York City, enclosing check for \$3.50, the price per plate, requesting that they mail you a ticket *at once* and reserve a good place for you at the table.

HORSE DOCTOR IN TROUBLE,

BY H. A. HELA, M.D.C., GRANITE FALLS, MINN.

W. H. Coons, of Canby, Minn., was brought before the district court of this place and had to stand trial for a malpractice suit. The plaintiff is a farmer living near Canby and claims that he lost a mare in foaling on account of Coons' carelessness.

Coons is connected with a livery business at Canby, and said he had been practising veterinary medicine off and on for the last thirty years. He is about 60 years of age, puts up a good appearance, is quite eloquent in his talk, and his expressions are convincing and emotional. He carries two valuable books with him. The biggest one is a stock book which has stood the test for about thirty years and gives the treatment for all the diseases of horses, cattle, swine, sheep, dogs, cats and poultry. The smaller book is U. S. government special report on horses, and even this book Coons considers very valuable. He says he used to have all the other veterinary works, but they burned down when his office went up in the smoke. Besides the two books, Coons exhibits one big foal hook and an osteotrite. He is a warm defender of professional rights, and it pleases him to talk of us veterinarians.

Coons is called on the stand first and testifies something like this: One day last May he was called to plaintiff's farm and he reached there about 8 o'clock P. M. and found a mare trying to foal. He feels the mare and finds anterior presentation with the head turned back. Both front feet are in the passage and protrude about two inches on the outside. He could not find the head, so he takes his osteotrite and cuts both front feet off about the knee. He could not find the head now even, and in an attempt to turn the foal, he takes hold of the hind legs, but could

not turn the foal. Then he takes his osteotrite and cuts off the hind legs about the hock. This way he works for about eight hours, and about 4 o'clock in the morning, after having exhausted all human training and skill, he gives up and says to the owner: "I bet twenty-five dollars there isn't a man in the state of Minnesota who can get that colt out of her."

Plaintiff testifies that he called Coons to assist a mare in foaling and when Coons reached the place and examined the mare, he said: "We have to cut the colt all to hell." While Coons worked in the mare he used a big foal hook, which slipped and tore the mare several inches, causing bleeding. Coons used ropes and had a livery man to help him to fasten the ropes on the foal's legs. They killed the mare and on post mortem found one rope on one hind leg and the other rope on one front leg. When Coons noticed this, he exclaims: "My God, if I did not have the ropes wrong I would have saved your mare."

Coons testifies now that it was not a mistake on his part, but that he fastened the ropes that way for the purpose that he could get the foal nearer to him so he could cut the foal's body in two with his osteotrite and deliver it in two pieces.

Several witnesses were heard, but they testified same as above. Three veterinarians were also called to give expert testimony, but only one, in behalf of the plaintiff, was put on the stand.

After a few hours' deliberation the jury rendered the verdict: Defendant Coons is found guilty of malpractice and has to pay the value of the mare, one hundred and seventy-five dollars (\$175.00) with interest from May, 1909.

Defendant Coons applied for new trial, which was granted, and the case will come up again in June.

DR. G. E. THOMAS, Billings, Montana, in forwarding a copy of the program of a special meeting of the Montana Veterinary Medical Association, held at Billings, February 9-10, says: "Our association is in its infancy and membership small, but we made a good showing here and have bright prospects for the future." The program certainly indicates a good meeting judging from the subjects treated and their authors.

REPORTS OF CASES.

SOME REPORTS OF CASES.*

By W. J. MARTIN, V.S., Kankakee, Ill.

A CASE OF OPEN JOINT.—On April 10th of this year I received a message from Mr. C. to visit his farm, as he had had a valuable young mare badly injured in a runaway. On arrival at the farm, I learned that Mr. C., while in the field working four big horses on a "Pulverizer," the animals had become frightened and made a strenuous attempt to get away. In the mixup, the tongue of the implement plunged into the ground and broke short off near its insertion into the machine; this had thrown Mr. C. from the seat and at the same time threw a young mare that was hitched on the "nigh" side of the machine down; when she was quickly dragged by the other horse up against the revolving knives of the implement.

When matters were finally straightened out it was found that the fallen mare had been badly injured by the sharp blades, on the external surface of the left hind leg. Previous to my arrival, the mare had been placed in a box stall, where, owing to the excitement, as well as the loss of considerable blood, she soon laid down with the injured limb underneath the body. On getting her up, the injured limb was seen to be thoroughly soaked with urine from the floor.

On examining the injured leg, a sharp incision was found about six inches in length, situated on the external surface of the tarsal joint, on a line with the junction of the calcaneum and cuneiform bones. The incision extended down to the bones of the tarsus for its entire length. At the lower orifice, synovial fluid was discharging. The mare did not manifest much pain or suffering aside from being somewhat excited and nervous. The fact that the animal had lain down and thereby rendered the parts liable to septic infection caused me to give a guarded prognosis to the now anxious owner.

* Presented at twenty-seventh annual meeting of the Ill. Vet. Med. Ass'n, December, 1909.

Hot antiseptic fomentations were used to cleanse the entire joint, *sapo viridis*, U. S. P. was then applied to the edges of the wound and the hair was removed with a razor. The joint was again fomented with the hot antiseptic solution, and the incision into the joint was entirely filled with boracic acid; the joint was then swathed in absorbent cotton and roller bandages applied.

As the mare was young and strong and appeared to be abundantly able to stand up, at least for a few days, it was decided as best not to put her in slings, but to tie her head up so that she would be unable to lie down and thereby soil the leg. The dressing was not interfered with until the fourth day, when it was removed, and a nice large clot of synovia was found resting snugly at the base of the wound. The joint as a whole was now dressed with an antiseptic emollient ointment, but none of this was permitted to enter the wound, which was again filled with boracic acid and done up as before. The general appearance of the mare at this time was very encouraging, she ate well, did not experience a great deal of pain in the joint, and stood up well.

The second dressing was allowed to remain in position for five days, when it was removed. And it was then seen that there was but a small amount of synovia on the cotton and healing was making rapid progress. From this time forward, the mare made a rapid and uninterrupted recovery, and at the end of twenty days the bandages were dispensed with and equal parts of boracic acid and hydrated alum were dusted on the parts several times daily to heal the ununited edges of the skin. When healed, there remained but a slight cicatrix of the skin, and but a slight enlargement of the joint without any lameness.

A UNIQUE CASE OF CHOKE.—On June 7th of this year I received a message from Mr. R. to come to his farm forthwith, as one of his best mares was choking. On reaching the farm the following account of his troubles was given to me by Mr. R. At noon he had given the subject (a fine mare aged three years of the draft type) a small feed of oats. The animal apparently being very hungry or greedy, attempted to swallow the entire amount at once; in this she was unsuccessful, and a case of choke was the result. Mr. R. being alone on the farm at the time, became somewhat excited, and in an endeavor to relieve the mare he seized a cheap twenty-five cent whip which was close at hand, and with this he endeavored to push the mass of oats down the mare's throat. In this maneuver he was highly successful, but alas, on attempting to withdraw his improvised probang, twelve

inches of it remained in the pharynx. On adjusting the speculum and widely extending the mare's mouth, the hand could be passed deeply into the pharyngeal region where the fingers encountered the foreign body with its upper end resting about at the junction of the larynx and the esophagus. Attempts to remove the object with the fingers proved unavailing, as but two of the middle fingers could be made to encompass it. A long slender splinter molar forceps was procured and with this instrument the whip butt was easily removed. The mare was of a very quiet disposition, and hence the trouble of chloroform anesthesia or esophagotomy was avoided.

The laryngeal parts were swabbed with a weak solution of borax and the animal's head tied up for the night. A guarded prognosis was given, because the foreign body had been in situ for about eight hours and fatal laryngeal complications were feared. For five days the mare was unable to partake of either water or food; after this date, she drank water with difficulty, and could masticate a small amount of succulent green food. Hot fomentations were applied several times daily around the throat, and followed with inunctions of camphorated oil; an abscess developed on the internal mucous surface of the larynx which at one time threatened suffocation, but ruptured just prior to the time tracheotomy was decided upon. After the evacuation of the abscess, the mare made a rapid and complete recovery.

A PECULIAR ACCIDENT.—On October 1st of this year I was summoned to attend a horse in the adjoining county that had during the night previous stumbled into a section of a field harrow that had been carelessly left in a field where the horse was at pasture. The right fore foot of the animal had been firmly wedged between two rows of teeth on the implement in so firm a manner as to render useless all efforts of the horse to free himself. During its struggles the animal had fallen over on its right side with the hind part of the body on the harrow, while the head and shoulders rested on the ground. In this predicament the horse was found the next morning by its owner. During its struggles one of the harrow teeth had penetrated the external wall of the hoof just above the coronary band and downward for a distance of two inches. Some idea may be gained of the frantic struggles of the animal to release himself, when it was seen that one of the heavy harrow teeth had been bent to a right angle by the weight and exertions of the horse.

On my arrival, which was in the afternoon, the animal presented a frightful appearance. The right side of the head and neck was swollen to an enormous extent. The right eye was swollen entirely shut, though the pupil was not ruptured; the membrana nictitans protruded around the entire lower border, and was greatly swollen. The lips were greatly swollen and retracted, so that the incisor teeth were exposed. The right flank and hip were also bruised and swollen, wherever the weight of the body had rested on the harrow. Severe lameness was present in right fore foot that had been injured by the harrow tooth.

The owner thinking that the animal would never recover, was anxious to "use the ax"; but to this procedure his better half strenuously objected, the animal being her driving horse, "and not afraid of automobiles," and insisted that I be sent for. Hence my appearance on the scene. The old horse (some 12 or 14 years old) appeared cheerful out of his remaining good eye; he was in splendid health and condition previous to the accident which gave me some encouragement to undertake the treatment of the case. The swollen head and neck were first thoroughly fomented with warm water and antiseptic solutions impregnated strongly with alum. Deep incisions were then made through the swollen tissues of the face, neck and lips, and large amounts of bloody serum was squeezed therefrom, which afforded great relief to the patient. After the scarifications were concluded, the parts were again fomented, and when dry, annointed with antiseptic linseed oil. The injured foot was treated likewise, and was not bandaged. This treatment was advised to be continued at intervals of a few hours, as septicemia was feared. As there was not much difficulty experienced by the animal in breathing, the tracheotomy tube was not used, although the owner was advised that it would probably have to be used later on; and to advise me if difficult breathing should occur.

As the case was eighteen miles from my office, I informed the owner that I would return on the third day, in the meantime, should the animal die, he was to notify me. On my next visit I found the animal much improved, the swelling had greatly subsided, and the horse was contentedly munching on some green clover hay. The warm fomentations and oil embrocations were ordered continued, though at longer intervals, and the animal made a good recovery, with the exception of severe lameness in the foot which had been injured by the harrow tooth; and this also has gradually yielded to proper treatment.

I report this case for the sole purpose of calling attention to the fact that we should not be too hasty in forming an unfavorable prognosis and refusing to treat, even the most desperate appearing cases, because such do oftentimes recover under the most unfavorable circumstances, when given rational treatment.

CYSTIC AND URETHRAL CALCULI.

By Dr. C. W. SPRINGER, Uniontown, Pa.

Foxhound, eighteen months old, admitted to hospital on November 4, 1909, with history of urinary trouble for past six weeks, especially after a fox chase, when he would have much tenesmus and only a dribbling of urine.



Dog from which 2 oz. Cystic Calculus was removed November 9, 1909
Picture was taken on December 15, 1909.

EXAMINATION.—Upon passing catheter an obstruction was encountered at posterior end of bone in penis; urethral calculi.

I then palpated the bladder bimanually; a large, hard mass could be distinctly felt about the size of a hen's egg.



Cystic Calculus removed from eighteen months' old Foxhound. Stone weighs 2 oz. and measures six inches in circumference. Dog made good recovery.

OPERATION.—Removal of stone was advised and consent granted, November 9, 1909.

A catheter was passed into urethra until it came in contact with obstruction. An incision was made in urethra over end of catheter and calculi removed. The catheter was then passed into bladder, which was irrigated with boric acid solution.

After disinfection of skin, an incision was made through abdominal wall on left side of penis and the bladder exposed. An assistant now placed finger in rectum and pushed bladder upward and forward. An incision was made longitudinally through the bladder wall, which was greatly thickened, and the stone extracted by means of a pair of small bitch obstetrical forceps.

The bladder was then closed with two rows of continuous Lembert's sutures of catgut.

The abdomen was closed with a continuous catgut suture and the skin with interrupted silk sutures.

POST-OPERATIVE TREATMENT.—A catheter was passed daily for four days, or until the urine was passed voluntarily. Water was given ad libitum and dog kept on light diet for ten days. Bowels were kept open.

Recovery was protracted but uneventful.

Stone weighs 2 oz. and measures six inches in circumference.

TERATOID DEVELOPMENTS IN TESTICLES OF HORSES.

By B. F. KAUPP, M.S., D.V.S., Pathologist, Colorado Agricultural College.

Teratoid growths originate from germs or cells that have been extruded during early foetal development. The dermoid



FIG. 1.

cyst is an inclusion of cells of the ectoderm. In the dermoid cyst there is found similar structure to the outer skin. The stratified

epithelium lining the cavity is supported by a dense layer of connective tissue. Hair is developed from well-developed follicles. There is also found glands. The contents of the cyst consists of a dirty brown fluid which consists of the secretions from sweat glands, fatty material and desquamated epithelium.



FIG. 2.

The dermoid cysts in cattle and horses are most often found in the region of the neck. Dermoid cysts are found in birds and contain feathers. These cysts are called *Cystomapenniferum*, or feather follicles. The palpebral tertia occurs in the palpebral region of cattle and dogs and is due to faulty closure of the palpebral fissure.

In Fig. 1 can be seen the sectional surface of a testicle from a cryptorchid horse. *a* indicates two small dermoids filled with hair and a dirty brown fluid, consisting of exfoliated epithelia, fatty material and serum. The major part of the testicle is composed of loosely arranged connective tissue.

Tooth material is sometimes found in testicle and ovaries as well as in other parts of the body, other than the normal place for their development. These teeth are accounted for by sup-

posing that they are the result of misplaced embryonic cells. Fig. 2 shows a photograph of a testicle from a cryptorchid horse. This testicle contains eight compound teeth. Each tooth is surrounded by a connective tissue capsule. *a* indicates three of the teeth. *b* indicates the cord. Fig. 3 shows a microscopic

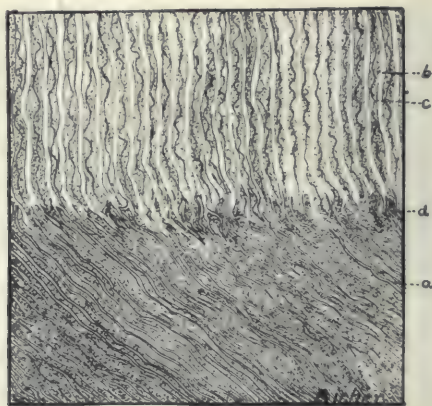


FIG. 3.

section of this tooth material. *a* shows the enamel tubules; *b* the dentinal tubules; *c* the dentinal fibrils; *d* the juncture between the dentin and enamel.

The tooth material for microscopic examination was first decalcified in 10 per cent. hydrochloric acid, then imbedded in paraffin in the usual manner for section purposes. Section stained in hematoxylin and eosin and clarified in oil of cloves.

Both of these testicles were smaller than the normal testicle of an adult horse.

SOME PARASITES IN SHEEP AND HORSES.*

By Dr. C. C. STEVENS, Sandusky, Mich.

Case 1. A four-year-old Western horse.

Symptoms—Ailing about three weeks; found paleness of mucous membranes; fairly strong pulse, 38-40; respiration normal; one eyelid and one ear drooped, and would stand in whatever position it was left in; temperature 105.

* Presented at special meeting of Mich. State Vet. Med. Ass'n, Saginaw, Jan. 25, 1910.

Before arriving home from call, was informed that horse was dead. Went back and held post mortem. Found a quantity of yellow serous fluid in abdominal cavity, also some in thoracic cavity; internal organs apparently normal. Upon opening stomach, found it contained about sixty strongylus armatus and found about eighty in intestines; found thirty-eight tapeworms; in large colon found apparently thousands of worms attached to mucous coat in clusters from one-half to two inches long.

Case 2. A seven-months-old colt.

Found it dead on arrival. On post mortem found six or seven feet of small intestines completely plugged with strongylus armatus; stomach was also filled with the same parasite; found over eighty tapeworms.

Case 3. Owners had lost two lambs the last few days; upon going to the premises, found one just dead and two sick. Owner said lambs were smart until about five or six hours before death, during which time diarrhoea was noticed; wander off from flock, stupor, finally coma, then death. Advised destroying one of the sick ones. Post mortem showed internal organs apparently normal, but upon rolling abdominal viscera out, there appeared a vermicular, life-like motion to the bowels. Upon slitting open the bowels, a fold of tape-worm apparently was forced out by internal pressure. It was found that the small intestine was completely plugged; seven worms were found fifty-three feet long, one twenty-eight feet, and several from ten inches to four, five and six feet. Nearly five hundred feet of tapeworms were taken from this lamb.

Case 4. This was the lamb that was dead upon my arrival. Found about the same condition, as also was another one opened at the same time. These lambs run on an old meadow which was good feed for sheep.

A PROLIFIC COW.

AMERICAN VETERINARY REVIEW, New York City, *Editors*:

Many times I have read cases of special interest in the REVIEW, and thought perhaps this one might add to same, so will enclose history and picture.



The case is an eight-year-old grade Ayrshire, owned by Dennis Hurley of this vicinity. In five years gave birth to twelve calves as follows:

- At three years of age, twins.
- At four years of age, triplets.
- At five years of age, twins.
- At six years of age, triplets.
- At seven years of age, didn't breed.
- At eight years of age, twins.

All the calves are living, all presentations normal, with the exception of the last one, which was an anterior with lateral deviation of the head.

Very truly yours,

A. W. BAKER & SON.

Brasher Falls, N. Y.

ARMY VETERINARY DEPARTMENT.

NO PROSPECT OF PASSAGE OF THE ARMY VETERINARY BILL.

After waiting for nearly three months for information regarding the army veterinary bill before Congress, the news finally comes that its passage is not expected during the present session. The principal reason given is that Congress has taken a firm stand in the matter of economy, and that no bills will be passed that increase any branch of the army in numerical strength or pay. The army veterinary bill does not call for an increase in the number of veterinarians, needed as it is, while the increase of pay recommended would be only about \$5,000 annually, which is an insignificant amount of money.

The other cause attributed as holding back our bill is that the Democratic members of the House Military Committee are opposed to it. Two of these were approached by letter, and neither of them stated any objection to the bill. In fact, Representative Hay, the leader of the Democrats in that committee, replied that he would be glad to do all he can to assist in its passage, should opportunity offer itself.

Thus it would appear that the real reason for the hopeless condition of this bill is that it is not strongly enough backed, and that it is looked upon as unimportant. If this bill does not become a law before the general army reorganization bill is introduced into Congress next year, as contemplated, we shall lose heavily in that scheme. The positions of veterinarians, as provided for in that measure, were undoubtedly calculated with a view to a previous passage of the present army veterinary bill. Some culling in the higher positions, at first acceded, has already been done in that scheme on account of the failure of the old bill, and more of it may follow before it comes fully to light, so that we may find ourselves again at the bottom of everybody else.

There has been so little interest taken in the present army veterinary bill by the army veterinarians themselves and the

veterinary profession generally, that those few who have bravely stood by it are thoroughly disheartened. This not so much, to state it again, on account of the loss of benefit that would have accrued from the present bill, but on account of losing the really improved positions contemplated for the future in the new army reorganization scheme.

This is the aspect of the present situation. It will take some severe awakening among the army veterinarians to make good the loss sustained by dragging along the present army veterinary bill for over five years, even opposing it, as it has been, from our own ranks because it embodied some unpleasant features. These will always reappear in any bill presented by the government. And it will need a strong appeal to the veterinary profession in general to show that the passage of a bill which puts the army veterinary service on a respectable footing is not merely for the benefit of forty-two army veterinarians, but that such would have a direct bearing upon the standing, reputation and progress of the whole veterinary profession of America. Not until this is realized and a conscious enthusiasm aroused, can we hope to take another step forward in the evolution of American veterinary science and practice.

OLAF SCHWARZKOPF.

ARMY PERSONAL NOTES.

Drs. Alexander Plummer, 4th Cavalry, and R. H. Power, 4th Field Artillery, have been designated by the War Department to represent the army at the annual meeting of the American Veterinary Medical Association at San Francisco in September, 1910.

Dr. Gerald E. Griffin, 3d Field Artillery, has in the March issue of the *Journal of the U. S. Cavalry Association* an article on "Saddle and Harness Galls," that is one of the best heart-to-heart talks to officers of the mounted service by a veterinarian which we have read in many years. Its memorizing by our young army veterinarians is sincerely recommended, because they all come into the military service utterly unacquainted with the great importance of the subject.

Dr. Coleman Nockolds, 1st Cavalry, now stationed at the Presidio of San Francisco, has not announced the appearance

of a first-born, but we happen to hear of it. There is no vacancy now in the Army Veterinary Corps, and the several threats of resignation from the service have not come true. The good, old army of Uncle Sam is not so bad after all.

O. S.

THE ARMY VETERINARY BILL PASSES THE SENATE.

Since writing the above report, word comes that the Senate has passed the bill: S. 1692, on March 9. This bill was published in the issue of September, 1909, of the *AMERICAN VETERINARY REVIEW*. It is a more satisfactory bill to the younger army veterinarians, as it does not require a re-examination until they have reached ten years of service, when they will be entitled to the pay and allowances of a first lieutenant.

We are pleased to report that there was no real opposition to the bill. Senator Root started an inquiry about the increased *rank* recommended, against which we know he is hostile. Senator Warren replied there was no increased rank, only an increase of pay, which brought out inquiries from other senators, until Senator Gallinger made the following statement:

"The senator from Wyoming is aware, but it is well enough to put it on record, that the requirements of veterinary colleges to-day are quite as exacting as those of our best medical colleges. These men have to go through a curriculum of the same length, studying substantially the same subjects, in addition to which they get, of course, instruction in the treatment of the various domestic animals. When a young man is graduated from a veterinary college to-day, he has given as much time and as much money to acquire his education as a young man who is graduated from one of our very best medical colleges."

This brief but benevolent statement apparently cut off all further opposition. The veterinarians of Senator Gallinger's state, in fact all of us, should express our appreciation to him for his liberal standpoint taken.

The bill goes now to the House Military Committee. It will be a great deal more difficult to get a favorable consideration there than in the Senate, from reasons well known. Only by a concerted action and enthusiastic support of the whole veterinary profession of the United States can we hope to succeed there.

The members of the House Military Committee should be approached first, asking them by letter to support this bill: "S. 1692, to increase the efficiency of the veterinary service of the army," and then similar letters should be forwarded to all representatives from the various states. Let everyone of our colleagues in civil life, who can muster any influence, do his share in assisting to help this bill pass which cannot but reflect favorably upon veterinary progress in America generally.

O. S.

THE second annual banquet and ball of the Veterinary Medical Association of the Colorado Agricultural College was held in the Masonic Temple, Ft. Collins, Colorado, February 25, 1910. The banquet room was gorgeously decorated with pennants. The reception rooms showed an array of college pillows in cozy corners. The following is the list of toasts: Dr. Geo. H. Glover, toastmaster; "To Our Guests," Mr. Y. R. Balmer; "To the Faculty," Dr. A. W. Whitehouse; Response, Dr. I. E. Newsom; "To the 'Vets,'" Miss Nellie Stiers; "Why is a 'Vet,'" Prof. F. C. Alford. Talks were also made by ex-Lieutenant-Governor Brush and Senator Ammonds, both of the Colorado State Board of Agriculture. An excellent talk was also made by Dr. C. A. Lory, president of the college.

OPPOSED TO DOCKING: When the press of the country becomes thoroughly aroused on the subject of docking horses' tails, this evil will be stamped out. It is encouraging to receive from S. S. Toman, editor of the *Trotter and Pacer*, New York, a letter in which he says:

"We have been getting *Our Dumb Animals* for several years and the writer always peruses it with pleasure and satisfaction. We are in thorough sympathy with the grand work you are promoting and I am proud of the fact that our own paper is very consistent with the course of your paper in the matter of stimulating kindly feeling and sympathy toward all dumb animals. We have always taken a strong ground against the custom of docking and never have allowed the picture of a docked horse to appear in our paper."

An excellent example for other horse journals to follow.
—*Our Dumb Animals*.

CORRESPONDENCE.

SACRAMENTO, CAL., February 21, 1910.

Editors AMERICAN VETERINARY REVIEW, 509 West One Hundred and Fifty-second street, New York, N. Y.:

The quarterly meeting of the Pacific States Veterinary Medical Association was held in this city last Wednesday and Thursday. It was well attended and intense interest was taken in the reading and discussion of the papers by the various veterinarians. The association, while primarily a California institution, has now taken the entire Pacific Slope under its jurisdiction and is rapidly gaining in membership, hoping soon to be one of the largest veterinary organizations on the Coast.

The association resolved to lend its every aid to entertain the visiting delegates on the American Veterinary Medical Association at the annual convention to be held in San Francisco, Cal., September 7th, 8th, 9th and 10th, this year, and to that end appointed a committee to confer with sister associations and the General Committee of the A. V. M. A.

A discussion as to the advisability of establishing a remount station on the Pacific Coast was productive of the following resolution:

Whereas, It is now the policy of the United States War Department to establish remount stations throughout the country, at which young horses purchased directly from the farmers and breeders are trained for army uses, and

Whereas, In the Pacific Coast States large numbers of horses suitable for army purposes are bred and raised, some of which are sold to the government and transported across the country to the remount stations located in Oklahoma, Idaho, and other distant points, therefore be it

Resolved, That in the opinion of this organization it would be economical and otherwise advantageous to the government to have a remount station established at some point in Central Cali-

ifornia, that such station would be of great benefit to the farmers and breeders of the Pacific Coast states, who would thus be provided with a market for their horses close at hand, and that by its establishment the government would effect a very large saving in the transportation of horses, hundreds of which are annually brought across the country from the eastern and middle states by rail and shipped to our island possessions from Seattle and San Francisco.

Resolved, That the matter of the economic value of a remount station in California be called to the attention of our senators and representatives in Congress, and that they be requested to use their best efforts to secure the establishment of a remount station in this state as soon as possible.

Resolved that a copy of these resolutions, signed by the president and secretary of this organization, be sent to each of the senators and representatives in Congress of the state of California.

A long discussion was had over a stallion law. It was discussed in all its phases and it was resolved that the enactment of such a law was of immediate necessity. It is to be modeled after some of those in effect in fourteen states of the Union, and so framed that it will be acceptable to owners and dealers of stallions and at the same time prevent the breeding of unfit or blemished stock. The matter will immediately be brought to the attention of the legislature as soon as it meets in January, and every effort made to enact a law as indicated.

The papers and authors were as follows: "Bacterine in Treatment of Fistula of the Withers," Dr. J. B. Boomer, San Francisco; "History of Veterinary Legislation in California," Dr. Thos. Carpenter, Oakland; "Three Interesting Post Mortems," Dr. N. E. Nielsen, Sacramento.

The clinic was interesting and edifying. (a) "The Extraction of Sixth Molar with Open Molar Cutters"; (b) "Removal of a Portion of Incisors in Old Horse," Dr. Ira B. Dalziel, San Francisco; "Tibial Neurotomy for Relief of Spavin Lameness," Dr. Thos. Carpenter, Oakland; "Goitre," Dr. J. B. Boomer, San Francisco; "Cæsarian Section in the Bitch," Dr. W. L. Williamson, San Francisco; "Removal of Anal Glands of the Skunk," Dr. G. W. Locke, Lockford, Cal.

Respectfully submitted,

N. E. NIELSEN, Secretary.

BIBLIOGRAPHY.

TEXT BOOK OF MEDICAL AND PHARMACEUTICAL CHEMISTRY, by Elias H. Bartley, B.S., M.D., Ph.G., Professor of Chemistry, Toxicology and Pediatrics in Long Island College Hospital; late Dean and Professor of Organic Chemistry in the Brooklyn College of Pharmacy, etc. Seventh Revised Edition with ninety illustrations, 734 octavo pages, cloth. Philadelphia, P. Blakiston's Son and Co., 1909.

This book, from the press of the celebrated medical publishing house of P. Blakiston's Son & Co., contains all the essentials of chemistry needed for the medical student. Covering, in Part I., chemical physics, the author, in Part II., takes up the theoretical chemistry referring to the atom and molecule. While in Part III. attention is fully paid to inorganic chemistry, in which the several groups are given all the necessary space. In Part IV. the author treats, not too technically, organic chemistry, closing with sections on alkaloids, ptomains, toxins, food poisoning, glucosides, proteins, vegetable and biliary coloring matters, poisons and their antidotes. But it is in Part V. that Dr. Bartley has best acquitted himself as the practical chemist that he is known to be. The writer on chemistry is too frequently apt to be a man unmindful of the applications of the science to practical medicine. Dr. Bartley is not one of these. In Part V. he takes up physiological chemistry; the enzymes and ferments; animal nutrition; foods and diet; digestion; milk; colostrum; milk adulterations; the urine. A carefully written table of contents, glossary and index accompany the text.

Works on chemistry are all too frequently flatulent or muddle-headed. Either the writers think it necessary to overload, through the length of several volumes, their work with a multiplicity of words. Like Lord Beaconsfield said of Gladstone, an author on chemistry is too often "a sophisticated rhetorician inebriated with the exuberance of his own verbosity." Or writers on chemistry may, in their dullness, leave unexplained what should be explained, and go explaining things which should not be explained. Flatulency and muddle-headedness are the pitfalls of writers on chemistry. Dr. Bartley in his work has

avoided both evils. The medical student will find in his book the chemical facts necessary to be known before *materia medica* is studied. Should the facts on chemical physics, theoretical chemistry, inorganic, organic and physiological chemistry in the work be mastered, in connection with a quantum of laboratory work, the student will be prepared for collateral work akin to chemistry, and, besides, will have acquired something of practical worth—which is something far better than having a head full of useless chemical terminology. We recommend Dr. Bartley's work to instructors in chemistry in veterinary colleges. Six successful editions have already made it well known in the medical colleges.

D. A. H.

THROUGH the courtesy of Dr. O. L. Boor, secretary of the Indiana State Board of Veterinary Medical Examiners, we are in receipt of a clipping from *The Indianapolis Star* of Thursday, February 3, 1910, which states that veterinarian James S. Culbert, of Muncie, was chosen as Eighth District chairman by the Republican party. They state further that Dr. Culbert has been active in politics ever since he came into the county, having served one term as Jay County chairman and one term as postmaster of Portland. The doctor graduated from the New York College of Veterinary Surgeons twenty-two years ago. Dr. Boor in his letter of transmittal also says: "Dr. J. L. Axby, Lawrenceburg, Ind., and Dr. W. Axby, Harrison, brothers, were elected mayors of their respective towns at election last fall. Now that is going some for brothers, and veterinarians at that. The standing of veterinarians has changed materially in this section during the last twenty years."

DR. HERBERT R. GROOME, of Jewell City, Kansas, has appropriated one of the jewels of that place, in the person of Miss Maude McClain, with whom he was united in marriage on March 19, 1910. We wish the newly wedded couple all the joy that such a state can bring them.

IN renewing his subscription to the *AMERICAN VETERINARY REVIEW*, Dr. T. C. Miller, of Port of Walhalla, N. D., says of it: "To me it is the center of gravity of the veterinary profession and the zenith of practical and scientific instructiveness."

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CONGENITAL MALFORMATIONS OF EXTERNAL FEMALE GENITAL ORGANS [*F. C. O'Rorke, A.V.C.*].—These were presented to the author as being cases of hermaphrodite.

Case I.—Aged mare had a vulva well developed, normal in size and shape, but half an inch below the inferior commissure and a little to the left, there is a circular orifice, within which and slightly protruding, there is a small pigmented body covered with mucous membrane. This orifice communicates above with the vulva, and from the vulvar side, by external pressure, this small pigmented body could be made to protrude at the inferior commissure. This must have been considered as a penis, while it was but an hypertrophied clitoris. This mare was continuously “horsing,” and frequently when making water a few drops of urine would escape from the lower opening.

Case II.—A seven-year-old mule, when passing by any one, walking, would at first sight be taken for a gelding. The vulva is a vertical slit, half or three quarters of an inch long and almost completely hidden under the anus. The labia are undeveloped. The clitoris is not bigger than a pea. The mule was very docile and in no way disturbed by her infirmity.—(*Journ. Comp. Patho. and Therap.*)

MULTIPLE LIPOMATA OF THE PERITONEUM IN OX [*A. M. Trotter, M.R.C.V.S.*].—This found at post mortem: The cow had her uterus removed. The os uteri having remained patent, the peritoneal cavity was in direct communication with the vagina. If, as some say, lipomata are caused by irritation, in this case it may be considered as probable that the irritant had gained

access to the peritoneal cavity through the os uteri. The peritoneum, specially on the left flank, was studded with nodules, white in color and of various sizes. They were attached with long pedicles. After rigor mortis had set in, most of them were soft, tough, not elastic, somewhat translucent, while others were firm and hard. Their surface was uneven and their inside divided into compartments. On section, they were composed of white material with areas of fat, normal in appearance and similar to ordinary adipose tissue. Similar nodules existed on the stomach, liver, spleen, kidneys, omentum, mesentery, intestines and bladder. They were all lipomata.—(*Ibidem.*)

ROUND CELLED SARCOMA IN A MARE. [*F. W. Cox, F.R.C.V.S.*].—This was the illustrated record of a bay mare, nine years old, which after some twelve months of good service developed over the body small tumor-like growths. These were on the face, neck, trunk and extremities. They kept on growing larger and also in number. Some smaller appeared later. Others were quite big. Sir John McFadyean examined them under the microscope and classified them among the round-celled sarcoma. In this animal the condition seemed to have been entirely involving the skin only, as at the post mortem no lesions were found internally.—(*Veter. Record.*)

PRELIMINARY NOTE UPON THE NEW OPERATION FOR ROARING IN HORSES [*Prof. F. Hobday, F.R.C.V.S.*].—Record of the so far successful results obtained in four cases of roars, two of which were operated by Prof. W. L. Williams, of Cornell University, during his last trip to Europe. The horses will be closely watched and critically examined to see and report if the improvement, so far obtained, is or is not permanent. The operation made through an incision of the crico-thyroid ligament, after division is made of the cricoid cartilage, is described as follows: "A specially shaped retractor is now introduced and the two cut edges of the larynx held well apart, so that the interior of the larynx can readily be viewed. With a long specially made tenaculum forceps, the mucous membrane lining the interior of the larynx is grasped and pulled tense, whilst an incision is made behind it with a long double-edged razor-bladed scalpel. This incision is continued until the whole of the mucous membrane lining the ventricle has been incised, or, if the operator prefers it, can be separated with the handle of the scalpel, some blunt in-

strument or even with the fingers. The interior of the larynx is then swabbed with sterile wadding tampons, and the patient allowed to come out of anesthesia.—(*Veter. Journ.*)

CERVICAL TUBERCULOSIS AND FRACTURE OF FIRST RIB IN A MARE (*C. Pack, M.R.C.V.S.*).—Aged six years, a mare used for carting, was attended for abortion. A year after she was found scarcely able to move, the muscles of the neck and fore-arm being tender and stiff, Temperature 104.1° F., pulse 70. She moves as a laminitic horse. She is unable to lower her head. Acute rheumatism is suspected and treatment prescribed accordingly. A case of tubercular otitis was then observed by the owner; and fearing that the mare might have it also, tuberculin test was proposed but declined by the owner. There was some improvement after the mare had been kept in slings for a while and had been well fed. She was then taken out and let loose in a lane, where one day she became suddenly very lame after making a bad stumble. Finally she had dropped elbow badly and with a diagnosis of fracture of the first rib with doubtful results, the owner ordered her to be destroyed. At the post mortem, the fracture was detected. Both front ribs and some cervical vertebræ being taken from the carcass in one piece and being boiled, the two last cervical and first dorsal vertebræ were found ankylosed and as well as the two ribs diseased with ostitis. No examination of the internal organs could be made.—(*Veter. Journ.*)

TUMOR OF ONE HORN CORE IN A HEIFER [*Same author*].—Two-year-old heifer had one horn much more developed than the other. The left one was normal in appearance except in size and being very thick at its base. The cow was in good health, had calved and was a good milker. The extra length of that horn was a decided inconvenience to her in her stall. One day a blood vessel burst in the poll and threatening hemorrhage occurred. It had left a ragged wound at the base of the horn and pulsations of a fairly large artery could be readily seen. Properly dressed, all went well for a time, but another hemorrhage took place and the animal bled to death. The horn core was found very much enlarged and hollowed with cavities. The circumference of the diseased horn at the widest part measured 16 inches and the length along the greatest curvature was 22 inches. The healthy horn measured 6 inches at its widest circumference and 10 in its greatest curvature.—(*Ibidem.*)

SULPHUR POISONING IN HORSE [*H. W. Percy, M.R.C.V.S.*].—Several horses were reported ill on a farm. One has died. The history was that sulphur had been given to them to put them in good condition. One ounce, it was said, but probably eight by more careful investigations. Symptoms: great pains, pulse weak, quick and easily compressible. Temperature 104° F. Quick respiration, quivering of muscles, difficult swallowing, soft feces, like clay, urine acid and high color. Diarrhœa followed. The treatment: castor oil, eggs and milk, chlorodyne alcoholic stimulants. All the animals got well. At the post mortem of the one that had died there was high inflammation of the stomach and intestines which contained sulphur powder mixed with the food.—(*Veter. Journ.*)

A MUMMIFIED FOETUS [*D. Forwell, M.R.C.V.S.*].—Cow was put to the bull on November 5, 1908. On October 8, 1909, she shows a piece of putrid placental membrane hanging from the vagina. Vaginal examination is negative and she is supposed to have slipped her calf somewhere. The placental piece was removed. On the 10th of November she is again discharging filthy matters from the vagina. Antiseptic injections are prescribed. On the 13th she has another spell. There is a small hard mass protruding from the vagina. It is pulled away from her and proved to be a calf about the size of a fox terrier. There was no hair or skin and very little flesh on it. The skeleton was more or less shriveled and partly "calcified." The cow had carried her progeniture about three months or more later than she ought to.—(*Ibidem.*)

IMPERFORATED ANUS IN A CALF [*P. S. Munshi, G.B.V.C.*].—A cow delivered a calf with imperforated anus. The little fellow is taken to an empiric who operates on the wrong place. Three days after the calf is in somewhat comatose condition. The wrongly operated part is sutured and an opening is made by the author in the right place. Fecal matters are extracted with warm water enemas. Recovery follows.—(*Ibidem.*)

UNCOMMON SEQUEL TO A FRACTURED PELVIS [*Hy. Gray, M.R.C.V.S.*].—Red pomeranian run over, has a fracture of the pelvis. Treated and discharged. Some seven weeks after he had some little ailments for which he was treated and got relief. But two months later he is taken with frequent repeated vomiting and

dies two days after. At the post mortem, a pint of greenish yellow fluid was found in the abdomen. There was a small perforation in the small intestine and an inch or so further on the bowel was twisted and a knuckle of it appeared herniated in a pouch to which it firmly adhered. On careful dissection it was found that "the fracture had involved the pubis of the left side, which was broken in two places with a small piece of bone loose between them and also the neck of the ilium, which was broken across. A loop of the small intestine near the junction of the large and small intestine had become adherent in the pelvis to the fracture of the ilium which had penetrated and lacerated the parietal peritoneum locally. The inguinal canal was normal and free from bowel."—(*Veter. News.*)

VESICAL CALCULUS.—A photograph* shows the size of the stone, which measured six and three-quarter inches in circumference and was the full size of a hen's egg. Stones as large and even larger are on record as having been found at post mortem, but the interest in this case lays in the fact that it was passed through the urethra of a horse.—(*Veter. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

RADICAL TREATMENT OF A DOUBLE INGUINAL HERNIA IN A FOUR WEEKS' COLT [*Dr. Fontaene, Army Veterinarian*].—This congenital hernia is, on the right side, as big as a child's head, and as a man's fist on the left. When the animal is standing, the tumor looks like a big mass which gets gradually larger. Spontaneous recovery is not to be expected and an operation must be performed. For the right side, it consisted first in incision of the scrotum and exposure of the hernial sac. The contents of the hernia are readily reduced in the abdominal cavity except what constitute the genital external apparatus. A temporary cat gut ligature is placed around the cord well up. The

* Photograph was not received by REVIEW.

sac is opened and the testicle and its annexes are exposed. At that moment a loop of the boating colon slips by the temporary ligature and comes out. It is easily replaced and the testicular cord with the envelops are taken hold of with a metallic nipper above the temporary ligature. The testicle is then removed with limited torsion. The stump of the cord is pushed in the abdomen. The temporary ligature is taken off and the hernial sac is closed tight with a bleeding knot firmly secured. The protruding portion of the sac was then amputated, the inguinal ring was closed with sutures and also the skin. Similar manipulations were carried out for the left side. The stitches of the skin came off in eight days and recovery went on without any unusual event.—(*Bullet. Socie. Cent.*)

PERINEAL HEMATOMA LOOKING LIKE A VESICAL HERNIA [*Dr. Roussel*].—St. Bernard slut has had puppies. Two days after she makes violent useless efforts to micturate. In the perineal region, there is to the right of the ano-vulvar fold a tumor of the size of a small orange. It is hard and painful. The pulse is 140. The temperature 37.3° and the breath has a strong ammoniacal odor. Palpation and auscultation of the abdomen give the sensation of fluid and when the tumor is examined by vagina, it seems hard and crepitating. By catheterism of the bladder, about 10 litres of dark ammoniacal urine are extracted. When the bladder is empty the tumor has still remained. Exploration with a fine trocar, made through the vagina is negative. The tumor must be excised. After disinfection, the skin and the transverse muscles of the perineum are incised and an hematoma pressing upon the urethra is exposed. Curettage, drainage of the wound, muscular and cutaneous sutures, recovery in ten days.—(*Ibidem.*)

INGUINAL EVENTRATION IN AN ADULT GELDING—RADICAL OPERATION—RECOVERY [*Dr. Fontaine, Army Veterinarian*].—Nine years old, this horse makes a somersault, falls backwards. He rises without trouble and walks 8 kilometers carrying his rider. Three hours after, it is noticed that he has in the right groin a large swelling, about the size of a boy's head, with diffuse surroundings and easily reduced by taxis. It returns as soon as the pressure is stopped. There is no colic, the tumor is not painful. The diagnosis is evident and an immediate surgical interference is decided. The horse is etherized and the following

steps carried out: 1. Reduction by taxis; 2. Thorough disinfection of the region, free incision of the skin on the most prominent point of the tumor, laceration of the connective tissue and exposure of the opening of exit of the viscera, viz., a rupture of the small oblique muscle of the abdomen and of the peritoneum about where the puncture of the abdomen is made in abdominal cryptorchid by the Danish method. 3. The edges of the oblique muscle are brought together with cat gut. A second suture closes the external inguinal opening and a third brings the borders of the cutaneous incision closed tight together. Complete recovery in 20 days.—(*Bullet. Soc. Cent.*)

CHRONIC BURSITIS (HYGROMA) OF THE WITHERS [*Dr. Fontaine and Prof. Rayssiguier, Army Veterinarians*].—Eight-year-old draught horse had on the summit of the withers a soft tumor, size of child's head, fluctuating, almost painless, bilateral and without inflammatory manifestations. An exploring trocar is thrust in it and a limpid liquid, synovial-like, establishes the diagnosis of bursitis. Repeated capillary punctures were tried first, but gave no good results. The collection returned every time. An incision was made of the top of the tumor and one at its base and a drain tube inserted. The animal rubbed himself and a beautiful fistulous withers is established with abundant suppuration, warm and painful oedematous swelling, lymphatic cords, etc. Free incision of the fistulæ is made, curettage and drainage tubes are inserted. Everything seemed to go on well for a while, but yet after six weeks of treatment, there is a spot on the top of the withers on the apex of the dorsal vertebræ where the skin remains loose and the cavity of the hygroma remains. A crucial incision is then made which allows a full view of the bottom of the hygroma, which is dressed as a single wound. After two weeks the horse finally returns to his work. The authors acknowledge that they finish the treatment by what they ought to have began.—(*Rev. Gener. Medec. Veter.*)

TESTING THE TREATMENT BY BIER'S METHOD [*A. and R. Lasserre, Army Veterinarians*].—In France, this method is not frequently resorted to. At least records are few. The authors have decided to test it. They used sometimes the band of Es-march or again a single cord, which they applied between the lesion and the heart, repeating the application during three or four consecutive days and then stopping for twenty-four or forty-

eight hours. They record two cases of suppurative tendinous synovitis of the hock, which were both successfully treated and where both animals resumed work in short time, taking in consideration the severity of the cases. The authors record also the results they have obtained in treating acute lymphangitis, appreciating the results principally in measuring the perimeter of the extremities at the hock and the fetlocks. Five cases of lymphangitis were submitted to Bier's treatment. The results somewhat good, were not as satisfactory as in the two other cases, and another animal treated in the ordinary method of treatment showed as much and as rapid improvement as by Bier's compression. In a last subject suffering with sub-glossal abscess, the results were doubtful. The conclusion of the authors are that the treatment gave truly valuable results in suppurative inflammation and open injuries.—(*Rev. Veter.*)

UTERINE AND VAGINAL CYSTS [*Vidal, Jr.*].—These may be the cause of the violent expulsive efforts often observed in pregnant females or after parturition. In one case it was a pregnant Norman cow. She makes violent efforts. She aborts. In removing the envelops, Mr. Vidal feels a smooth fluctuating tumor, painless and as big as the two fists of a man. It is attached in the right horn. Opened with a lancet, it gives escape to serous yellow, thready and odorless fluid. No further efforts from the cow.

In another aged cow, she has calved, but since a few days after, she continuously makes violent strains. There is a partial prolapsus of the vagina. On examination, there is found across the congested urinary meatus an elongated tumor about the size of a beer bottle. It is narrow at its base and hangs from the left lateral face of the vagina. It is smooth, painless and fluctuating. Punctured, it is emptied of its contents, viz., a liquid similar to that of the first case. Boric acid cleaning. The straining subsided at once. Cow is in perfect health.—(*Ibidem.*)

NOTES UPON SOME CASES OF LAMINITIS OBSERVED IN OSTEO-MALACIC HORSES [*Mr. Guilhem, Army Veterinarian*].—Case 1. Grey colt of 4 years is taken with laminitis of the four feet. Recovery in ten days. Three weeks after he has developed all the ordinary lesions of osteomalacia. One day he is unable to get up with fracture of the third lumbar vertebræ. Post mortem: Ordinary lesions of osteomalacia.

Case 2.—Aged gelding, has never shown symptoms of osteomalacia, and is found one morning suffering with laminitis of the

four feet. Treated, he recovers in fourteen days. A month and half after appear the chronic symptoms of osteomalacia.

Case 3.—Five-year-old stallion has presented the same laminitic condition. He is treated and partial recovery is followed by chronic osteomalacia with enlargement of the bones of the face and maxillaries.

Case 4.—This mare has already chronic lesions of osteomalacia. She takes laminitis of the four feet. One morning she makes a misstep and in the efforts trying to avoid a fall, the tendinous insertion of the flexor metatarsi muscle gives away. At post mortem the bones are found all diseased.

Case 5.—Gelding has osteomalacia, then laminitis follows.

Case 6.—Another gelding very diseased with osteomalacia also gets laminitis.

Referring to the opinion advanced of the toxi-infectious nature of laminitis as advanced by Prof. Sendrail, it has seemed to the author that these notes were confirmative of this theory.—(*Rev. Veterin.*)

DIFFUSE OSTEO-PERIOSTITIS IN A DOG—VISCERAL TUBERCULOSIS [*J. Auger*].—Also known as osteoperiostitis or osteitis deformans, this affection has been rarely recorded. This is the second case mentioned as having presented besides lesions of visceral tuberculosis. The subject was a slut, aged 18 months, which presented difficulty of locomotion and had swelling of the extremities since about six months. She was in a somewhat satisfactory condition of health, had good appetite, but her legs appeared to be held further apart than normal. She walked stiff, yet without great pain, and the lower extremity of the radius and cubitis, the carpus, external metacarpal bones, the tarsus and the metatarsals have an abnormal size. The diseased parts are not painful to pressure. Percussion of the chest gave no evident results, but auscultation revealed crepitating rales in the lungs. No glandular hypertrophy. Tuberculin test gave negative information. After being kept awhile under observation, the slut was destroyed. Post mortem—In the abdomen: Liver slightly congested, kidneys, spleen, stomach, intestines and bladder normal. Mesenteric and sublumbar lymphatic glands are hypertrophied and caseous. The lungs have centers of broncho-pneumonia with caverns. Pleura is covered with grey, hard granulations. Lymphatic glands also hypertrophied. The surface of the bones, especially those of the extremities, is covered with osteophytes surrounded with thick

fibrous periosteum. There is dry arthritis with ankylosis round the carpus and the tarsus. Researches for bacilli demonstrated that there was a true visceral tuberculosis. After maceration it was observed that the bones of the head and trunk were free from osteophytes. There were a few in the caudal vertebræ, none in the superior portion of the bones, but there were a few on the patella, the radius and the cubitus. The carpus was entirely ankylosed and also the tarsal bones. The phalanges were comparatively free.—(*Jour. de Zootech.*)

PARTIAL RUPTURE OF THE GASTROCNEMIUS MUSCLE IN A DOG [*Prof. P. Leblanc*].—Rupture of the Tendo Achillis is more frequent in the dog than that of the bifemoro-calcaneus muscle. This is one case. Hunting dog chasing game had become suddenly lame on three legs. The author saw him only fifteen days after. At first sight, the case looks as one of rupture of the tendon Achillis. The hock is dropped and the dog puts his weight on the posterior face of the metatarsal region. The femoro-tibial joint is in great extension. The dog moves slowly and the lameness increases, when the walking is fast or the animal runs. The cord of the hock is quite thickened: twice its normal size, but yet has not the knotty or deformed aspect met in cases of rupture. In exploring the muscular proper part, a regular notch is felt a little above the origin of the tendon. This notch involves half the thickness of the muscle. Its edges are indurated, and the space between it and the tendon is filled with a firm mass in which the muscular tissue is sclerosed. It is evident that there has been a partial muscular lesion. As the injury is three weeks old, no bandage is justifiable. Some improvement took place in time, but the dog remained permanently lame.—(*Journ. de Zootech.*)

THERAPEUTIC VALUE OF CRYSTALLIZED BORIC ACID [*Fayet, and Goudou, Army Veterinarians*].—A 13-year-old mare received a kick on the inside of the left hock. She is very lame and is in great pain. Blister is applied. The animal grows worse rapidly and escape of synovia takes place. The flow is quite abundant and soon purulent. There is quite a large fistulous tract. After thorough disinfection of the region, several injections are made of a solution of sublimate to the one thousandth, and then the fistulous tract is packed with crystallized boric acid pushed in with hydrophile wadding. This first dressing was

changed in the evening. The next day the flow of synovia is less abundant. The animal rests his foot on the ground. Boric acid is again introduced. On the second day there is such improvement that the animal is left alone. On the fifth day the escape of synovia has entirely stopped and as the improvement becomes more and more marked, the animal is taken out of the slings, turned loose in a box, and finally resumes work eleven days after her injury.—(*Repertoire Veter.*)

TUBERCULAR PERDICARDITIS [*Mr. R. Pecherot*].—History—Since a month this eight-year-old mastiff has a large abdomen, he breathes with difficulty and while at rest remains in sitting position, in which at times suddenly he drops down on his fore legs and falls on the floor. He has lost much flesh lately. Symptoms—Abdomen large, principally in the lower portion. Flanks hollow; cardiac contractions not detected by percussion or auscultation; exploration of the thoracic cavity reveals on percussion a zone of dullness, bound above on the limits of the superior and middle third, backwards to the second rib and forward to the elbow joint. When the dog is in sitting position the dull zone seems to move backwards. Auscultation cannot detect the vesicular murmur in the dull zone. In the upper part of the chest, the respiration is increased and loud. The dog never takes the decubital position. He stands with the anterior legs far apart and elbows bent outwards. Exploring puncture of the pericardium gives escape to a large quantity of fluid. Microscopic examination and cysto-diagnosis prove the presence of tuberculous perdicarditis. Put under treatment of digitalis and diuretics the dog improves very slightly for a few days, but finally gets worse and is destroyed, after presenting the following interesting symptoms: Enormous swelling of all the extremities and of the lower part of the neck. His respiration became jerky, heart accelerated and intermittent; 160 pulsations. Great loss of flesh and yet good appetite; frequent micturition; venous pulse. Post mortem—Thorax: Collection of citrine and yellow fluid similar to that taken from the pericardium; pleura covered with tuberculous granulations; lungs pushed upwards showed caseo-calcareous lesions of broncho-pneumonia; pericardium much enlarged and thickened is covered with tuberculous nodules; tracheo-bronchial lymphatic glands hypertrophied and with caseo-calcareous degeneration. The heart had valvular lesions also. Abdomen—Stomach dilated and full; intestines normal; liver enlarged and having

yellowish granulations of various sizes and in which small number of bacilli are detected. Kidneys are the seat of chronic tuberculous nephritis. Mediastine, mesenteric and lumbar lymphatic glands were also diseased.—(*Journ. de Zootech.*)

TENDINITIS OF THE TENDO ACHILLIS IN DOG [*A. Urbain, Army Veterinarian*].—Eight-year-old hunting slut while chasing a hare becomes very lame in the right hind leg. Carrying weight on that leg is painful; very much so, and when the dog moves she does it on three legs. At each step the right hind leg drops down and the metatarsal region touches the ground. There is no bruise nor rupture, but an elongated swelling as large as a small nut, which is situated two fingers width above the point of the hock. Involving the entire thickness of the cord, this swelling is warm, very painful on pressure. The case is one of tendinitis, a sprain of the tendo-achillis. Astringent applications of sulphate of iron were applied and followed by tincture of iodine. These did well, but it was necessary to resort to deep firing with fine points to obtain a complete and radical recovery.—(*Journ. de Zootech.*)

GERMAN REVIEW.

By JOHN P. O'LEARY, V.M.D.

CONCERNING THE ABSORBING POWER OF THE SKINS OF ANIMALS FOR SALICYLIC ACID AND ITS SODIUM SALTS [*Dr. George Schumacher*].—The results of his experiments are as follows: 1. Salicylic acid incorporated as an ointment or in alcoholic solution is absorbed through the intact skin of the horse, cow, dog and rabbit. 2. Natrium salicylicum is neither absorbed in ointment form nor in alcoholic solution through the intact skin of the above-named animals. 3. The salicylic absorbed appears in the urine on an average two hours after its application, when it is incorporated with adeps suillus and lanoline applied as a salve or in alcoholic solution. 4. Traces of salicylic acid are found in the urine on the second day after being applied in the form of an ointment. 5. When salicylic acid is applied to the skin in alco-

holic solution, its elimination from the system is much more rapid. 6. The smallest quantity of salicylic acid found in the urine when applied by friction in ointment form is as follows: In rabbits, 0.2; in dogs, 0.3; in cattle, 0.3; in horses, 0.5 gm. In alcoholic solution: Dogs, 0.15; cattle, 0.15; horses, 0.5 gm.—(*Berliner Tier. Wochenschrift*, No. 20, 1909.)

CONTRIBUTION TO THE STUDY OF ANJESZKY'S DISEASE [*Dr. F. Kern, in Krizerci*].—This disease is also known under the name of paralysis bulbaris infectuosa. It is not mentioned in foreign literature, although not at all rare in Hungary and Croatia. More than probable the disease exists in other countries and in consequence of its very acute nature it is not brought to the attention of veterinarians or perhaps it is not accurately diagnosed. The author called attention to several cases of this disease which were observed in Croatia. Besides four isolated cases in dogs and one in cattle, the disease appeared in epizootic form on a farm. In the course of four days, three cattle, two dogs and a cat fell victims to the malady. In all cases the most striking symptom was a very intense itchiness of a circumscribed portion of the skin (usually on the head), the part being rubbed or scratched to the extent that it became a raw bleeding surface. The results of the post-mortem examinations were negative in every case: the diagnosis being verified by animal inoculation. The experiment animals, which were inoculated with an emulsion of the brain substance of the affected animals either subcutaneously, intra-ocular or subdural, died with the same typical symptom of the disease; the incubation period extending at most to the eighth day. A remarkable incident occurred in one case; a reinoculation had been made in the third series, the animal died without ante-mortem symptoms of the disease. Anjeszky had already a similar experience while experimenting with mice. With regard to natural infection the author is inclined to accept the part played by some of the blood-sucking insects; the more so, because the infecting material is present in the blood and because artificial infection of the skin is easily brought about.—(*Korleminyck ar Osszchasonlito élet-éskortan Noreböl*, 1909, VIII. S. 108.)

INVESTIGATIONS CONCERNING THE HAEMORRHAGIC INFARCTS IN BEEF LIVERS [*Chaussé*].—Although Stubbe, Kitt, Saake, Jäger, Stroh and others in Germany had described this

liver affection which is frequently found in food producing animals, Chaussè took up the work and investigated the disease both macroscopically and microscopically and also as to its etiology. He found no vegetable or animal parasites which could be ascribed as a cause. From his investigations Chaussè draws the following conclusions: 1. This liver affection is quite a common occurrence in cows; it is rare in oxen and not seen in calves or other animals. 2. Its etiology is still unknown. 3. The origin of this disease is to be found in the ramifications of the portal vein, from whence toxic or other microbic influences act deleteriously upon the liver capillaries. 4. Only those livers which are badly affected are to be excluded for edible purposes, otherwise they may be consumed without danger.—(*Deutsche Tier. Wochenschrift*, No. 22, 1909.)

A CASE OF GENERALIZED TUBERCULOSIS IN THE HORSE [*Perrèt and Joseph*].—A three-year-old horse which the owner purchased when eight months old and which had never been sick was heard to cough. The attack of coughing came rather suddenly and became persistent; it was of a dry nature. Pulse, 50; respiration, 15; temperature, 39° C. The eyes looked bright and clear; no discharges; lack of appetite; auscultation and percussion negative; appetite still poor. After a course of treatment lasting eight days the coughing ceased. Six weeks later the horse began to emaciate rapidly, the appetite being almost lost. At this stage it was not possible to determine the character of the disease. Three weeks later the cough returned; at this stage the latter was of a hacking nature and dry. Still no discharges visible. The conjunctiva slightly reddened; temperature, 39.5° C.; pulse, small and thready, 52 per minute; heart action, weak. Fourteen days later constipation set in. The region of the loins became stiff and the back arched. The temperature now registered 38.5° C. Two weeks later diarrhœa followed, accompanied by painful micturition and abdominal tenderness; temperature, 38.7° C. The urine was yellow and thickish and contained albumen; white blood corpuscles and epithelium. On the same day the general condition of the horse became alarming, when dyspnoea appeared; the body being bathed in perspiration, the eyes began to droop, the facial expression anxious; an almost imperceptible pulse; groaning; deglutition impeded; milk being the only food the animal would take and even that was returned again through the nose and mouth. The horse died two days later. The following le-

sions were found on post mortem: On the interior surface of the pericardium grape-like tubercles were found, but no fluid exudate. Heart normal. The pleura resembled the pericardium, the right thicker than the left. In the lungs numerous tubercles were present, but no caverns. The bronchial and mediastinal glands were enormously enlarged and interspersed with gray tubercles. The abnormally large lymph glands compressed the œsophagus to the extent that swallowing was impossible. The mucous membrane of the bronchi and trachea were somewhat inflamed. The peritoneum was normal. The spleen contained innumerable tubercles. The liver was somewhat contracted; mesenteric glands similar to the bronchial glands. In the kidneys a few tubercles were found in the cortical substance. In all diseased parts enormous quantities of tubercle bacilli were present.—(*Deutsche Tier. Wochenschrift*, No. 51, 1909.)

INVESTIGATIONS CONCERNING THE CONTROL OF INFLUENZA IN THE HORSE [*Dr. Ostertag*].—Without a knowledge of the cause of influenza we cannot intelligently render an opinion concerning it, although perhaps under particular circumstances a control of the disease may be effected successfully by means of serum injections. Ostertag, therefore, undertook to determine the cause of the disease. The question arose as to whether the blood serum of horses which had recovered from an attack of influenza possessed immunizing properties. This was also investigated by the author. Blood from infected horses was obtained in large quantities and the serum employed for experimental purposes. The following are the results obtained: 1. In the nasal discharges of horses suffering from influenza and in the nasal secretions of healthy horses, various species of bacteria are present; among which are to be found pus producing streptococci. 2. In the expired air, in the bronchial mucus, in the blood of the jugular vein, and in the pulmonary blood of such infected horses which have recovered, bacteria are not discernible with the aid of the microscopes now in use. 3. On the contrary, in the thoracic organs and in some instances in the blood of horses which have died, showing symptoms of influenza and pleuritis, streptococci are present which resemble in their behavior the streptococci of suppuration. 4. It was not possible to transmit the disease to healthy horses by means of the nasal discharges, the expired air, the pleural exudate, the urine and blood of infected horses, nor from stable material where influenza had been prevalent and in

which many horses had been affected. Neither was it possible to establish the fact which of these agents transmitted the infecting material of influenza to the horses used for experimental purposes at the time the investigations were in progress. 5. It was also impossible to induce healthy horses to contract influenza with inoculations of the Schütz streptococci and Lignieres cocci bacteria.—(*Zeitschrift für Infectkrank. parasitar Krank. und Hygiene der Haustiere*, Bd. 5, H. 314.)

ACQUIRED DIAPHRAGMATIC HERNIA IN A FOAL [*S. László*].—A two-and-one-half-year-old foal which was kicked by a horse in the region of the right shoulder, resulting in the fracture of a rib. After the lapse of four days the foal showed symptoms of colic, dying six hours later. At the post-mortem examination it was discovered that a prolapse and incarceration of the intestines occurred in the thoracic cavity by means of a rent in the diaphragm, the latter being perforated by the broken pointed end of the sixth rib.—(*Allatorvosi Lapok*, 1909, No. 31, S. 373.)

GASTROINTESTINAL WORMS IN A HORSE, PRODUCING NERVOUS SYMPTOMS [*S. László*].—Nervous symptoms somewhat resembling those of rabies were observed in a poorly nourished horse. The animal was aggressive in manner to persons who approached him, biting himself around the chest and fore legs, even lacerating himself, accelerated respiration, frequent evacuation of the bowels. On the second day the animal lay down and was unable to rise again. Death occurred on the third day. Notwithstanding the similarity of this disease to rabies, the author was of the opinion that the symptoms indicated parasitic infestation (*gastro-philus* larvæ or *ascaris magalocephala*) in the stomach, or in the intestines. Experiment animals inoculated with an emulsion of the brain substance of the horse remained healthy. However, the length of time the experiment animals were under observation had not been stated.—(*Allatorvosi Lapok*, 1909, No. 32, S. 390.)

PARALYSIS BULBARIS INFECTIOSA IN THE DOG [*St. Laufer*].—On an estate and within the short space of two days three dogs became sick. The symptoms were as follows: Slavering at the mouth, scratching the head and neighboring parts. The animals died toward the close of the first day's sickness. At the post mortem no organic changes were visible. Rabbits inoculated

with portions of the medulla oblongata of one of the dogs showed after two and a-half days the same typical symptoms. A cat which was fed with a piece of the flesh of one of the rabbits in question was found dead on the ninth day. The author had also observed two extensive epizootics of this disease in dogs, at which time from four to five animals died daily.—(*Allatorvosi Lapok*, 1909, No. 36, S. 437.)

CONCERNING AN ELECTIVE STAINING OF THE SPORES OF ACID FAST BACILLI [*L. Betegh*].—The unstained portions of the tubercle bacilli which resist the ordinary methods of staining, and considered as spores by the author, may be stained according to the following procedure: The usual preparatory procedure is carried out with regard to the cover-glass preparation, then basic staining with carbol-fuchsin with moderate heating, then rinsed in water, subsequent staining with dahlia solution, according to Betegh, for 1-2 minutes, rinsing, differentiating with iod-iodpotassium solution (1:2:300) for a few seconds and afterwards in 96 per cent. alcohol or alcohol-aceton (1:2) until cloudiness disappears, then rinsing and drying. The plasma and the capsule of the bacilli appear blood red; the spores are stained black.—(*Közlemenyek az összehasonlító élet-es kortan Köréből*, 1909, VIII., S. 120.)

JASPER JAY "ALSO RAN."

At the recent convention of the Amateur Driving Clubs, at the Hoffman House, in New York, J. D. Callary, a Pittsburg delegate, told a story about a welcher.

"A bookmaker named Jasper Jay," he said, "was badly hit in a certain handicap, and, when Maid Marian won, he found he could not meet his obligations. So he decamped.

"Before decamping Jasper Jay posted this notice before his stand:

"SMITHVILLE HANDICAP.

"Maid Marian, first.

"John L., second.

"Diamond Dick, third.

"P. S.—Jasper Jay also ran."—*Rider and Driver*.

In five months from the date of this issue of the REVIEW, we will be "on the road to 'Frisco."

SOCIETY MEETINGS.

UNITED STATES LIVE STOCK SANITARY ASSOCIATION.*

At the Thirteenth Annual Meeting of the Interstate Association of Live Stock Sanitary Boards, held at Chicago, September 13 to September 15, the address of welcome was made by Hon. Phil. S. Haner, Chairman of the Live Stock Commissioners of the state of Illinois, who told the Association that they would be given an opportunity to see the extent and magnitude of Illinois live stock operations by visiting the yards, which cover five hundred acres, the 13,000 pens, 300 miles of railroad, and the thoroughly sanitary equipment. He mentioned the total receipts of the last year, same being \$306,566,518. Mr. Haner expressed the hope that the meeting would prove productive of great results in systematizing the work along lines of sanitation, the control of contagious diseases among live stock, and of closer co-operation between live stock sanitary boards; he mentioned the valuable state legislation secured in the last two years, which is only a beginning, and suggested the improvement that might be added to this by uniform state laws regulating interstate traffic in diseased animals; that where control measures are wanting, tuberculosis is on the increase among live stock, and that it was estimated that bovine tuberculosis costs the farms and stockmen of the United States not less than \$15,000,000 per year, and this loss would increase unless some reasonable and universal action is taken. He also told of the plans of the Illinois Board of Live Stock Commissioners toward a modern biological laboratory for the production and free distribution of serum for use in hog cholera, tuberculosis and other diseases, under the direction of Dr. A. T. Peters.

The address was responded to by Dr. C. A. Cary, State Veterinarian of Alabama, who expressed the pleasure felt by the

* The REVIEW desires to acknowledge its indebtedness to Dr. A. S. Peters, chairman of the publication committee, and to Prof. J. J. Ferguson, secretary and treasurer, for the very complete summary of the September, 1909, meeting of the above association.

Association in being the guest of the Illinois Live Stock Sanitary Board and city of Chicago, and the belief that from such meetings as these great results would be achieved and the importance of veterinarians recognized.

Dr. Dalrymple, president of the association, in his address mentioned the increase in states represented in the association over last year which now number twenty-eight, while last year there were but seventeen, and he felt that a backward glance warranted congratulation to the association in the growth of interest and real substantial good done. He mentioned among the notable accomplishments the stupendous, but successful, task of exterminating contagious pleuro-pneumonia from the United States by the Bureau of Animal Industry of the United States Department of Agriculture; the victory over foot-and-mouth disease; the extermination of the cattle tick which will so soon be accomplished; and the very successful results in the investigations of hog cholera. But even with so much done, the work ahead is still of such large proportions that the same untiring American spirit of energy must be manifested. He touched upon the importance of the branch of government controlling sanitary conditions of live stock and mentioned the necessity for united effort toward the destruction of zymotic disease; the improbability of the layman familiarizing himself with all the agencies in the production of disease, as this would imply a life work in the investigation of the numerous contagious and infectious diseases of animals and a knowledge of the life histories of the various disease producing organisms and that this must be left to the scientific investigator in the field of bacteriology, to whom we are already so greatly indebted, although it is of great importance that the layman and stock owning public become acquainted with the more practical points demonstrated by scientists in connection with this class of disease, which can so easily be done through the excellent information to be obtained free from the National Department of Agriculture, Agricultural Experiment Stations, Farmers' Institutes and many other reputable agricultural journals; he also spoke of the danger from vendors of proprietary medicines; the "would-be benefactor" who is deceived into the belief that he has "hit" upon a specific which never failed and recommends it to his neighbors; and the professional fakir who neither knows nor cares what the disease is just so he sells his remedy; and thus no good being accomplished, the disease is permitted to spread, thus proving the need of education and accurate information.

Regarding those who have doubts as to the existence of germs because they cannot see them, Dr. Dalrymple spoke of the fatal results of the want of appreciation of the importance of sanitary measures and the permitting of the infected area to spread before the authorities learn of its existence; that more accurate information regarding laws of animal hygiene by owners of live stock, and their willingness to co-operate, would be a powerful agency for good in the prevention, control and eradication of some of the fatal animal plagues which interfere with national and international commerce in live stock; in short, a uniformity in live stock sanitary laws.

In the report of the Committee on Sanitary Laws and Regulations and the state officers of the various states, Dr. A. D. Melvin, of the Bureau of Animal Industry, chairman, stated that requests had been sent out to each state for literature relating to live stock sanitary affairs and from the information received, the remarkable advancement in tuberculosis legislation assumed prominence above all else. Relative to the need of legislation for assistance in the battle against this dread disease, Dr. Melvin said:

"From our standpoint one of the fundamental steps to be taken by a state in an intelligent effort to control any disease is to make provision to prevent the entrance of diseased animals from other states. The states having legislation which in general requires that the freedom from tuberculosis of all dairy or breeding cattle shall be determined by means of a tuberculin test applied within a short time prior to their entrance into the state or immediately thereafter, are thirty-one in number. In fourteen the requirements were made previous to 1909 * * *"

And he stated, further, that in the year 1909, in nine months seventeen states, a greater number than in the combined previous years, had created similar requirements. Six require tuberculin test on cattle admitted for exhibition purposes, and New Mexico makes a second test three months after admission.

Dr. Melvin in his paper on "Recent Outbreak of Foot and Mouth Disease" stated that it was first observed early in November, 1908, near Danville, Pa. All counties in which the disease was found to exist were quarantined November 12th and then cases being found in New York, both states were quarantined, and before the end of November, due to investigations made, fourteen counties in Pennsylvania, five in New York, one in Maryland and two in Michigan had been quarantined. Im-

mediately arrangements were made for co-operative work by federal and state authorities and a strict quarantine enforced. The force of trained veterinarians in the Bureau of Animal Industry and the live stock sanitary officials in the infected states made prompt and efficient action possible, thus demonstrating the importance and advantage of not having to delay the work until a force to deal with the outbreak could be organized, and the disease was confined to the areas infected. Every rumor of the disease was traced, the Bureau engaging 572 employees, and some idea of the tremendous amount of work involved in these inspections is shown by the fact that 108,683 visits were made; 1,565,699 animals inspected, including some re-inspections; 3,636 animals slaughtered. Two-thirds of the appraised valuation of the slaughtered animals were paid by the United States and one-third by the states. By December 19, within six weeks from the beginning of the work, all diseased and slaughtered animals had been buried.

In this work, even the inspectors took every precaution against spreading the disease by disinfecting their apparel and wearing rubber boots, gloves, hats and coats.

Special efforts were made to have all premises thoroughly and completely disinfected and on April 24, 1909, the quarantine was entirely removed.

The beginning of this infection was traced to Detroit to calves that had been used in propagating smallpox vaccine, it being considered probable that the vaccine was contaminated with the virus of foot and mouth disease and that this caused the outbreak. The United States Public Health and Marine Hospital Service of the Treasury Department was requested to join the Bureau of Animal Industry in a work of investigation to determine whether or not contaminated vaccine virus was the cause, and scientific methods showed that the smallpox vaccine virus was contaminated with foot and mouth disease. Detroit had obtained it from a firm in Pennsylvania in May, 1908, where it had probably been introduced with vaccine imported from Japan in 1902; the New England outbreak had originated from the same cause; although the investigations made at that time had not brought this fact to light. But the experiments after the Pennsylvania outbreak demonstrated that animals vaccinated with mixed virus show only lesions of cowpox or vaccina as a rule although the infectious principle of this disease remains in the vaccinal eruption; and in order to prevent these lesions from

being suppressed or obscured by those of vaccina, in some of the tests animals were used which had been vaccinated and were therefore immune to vaccina.

Immediate and effectual steps were then taken to destroy all contaminated vaccine virus from America. Prompt co-operation was met with from the firms handling it and soon all contaminated vaccine virus on the market was destroyed. Even manufacturers of vaccine virus for human use will be required to test their virus for the presence of foot and mouth infection and regulations have been issued by the Public Health and Marine Hospital Service to prevent the importation and sale in interstate traffic of vaccine virus contaminated with this disease. If similar control were given by law to the Secretary of Agriculture over biological products for use in human medicine, the danger of contagious diseases being brought in with preparations which are not regulated in this manner, would be greatly obviated.

The eradication of this disease cost the government almost \$300,000; the states over \$100,000. Besides the unestimated loss to dairy and stock raising industries and commerce, interstate and export trade were seriously interfered with.

Dr. Melvin also spoke in high terms of the co-operation met with from the railroads, who spent large sums of money disinfecting their premises.

In the discussion of Dr. Melvin's paper, Dr. Noack recommended the use of a carbolic acid solution over formaldehyde; stating it as his belief that the good results desired could be achieved without the affection to the mucous membrane of the mouth, and also the eyes, caused by the formaldehyde; to which Dr. Mohler replied that the results had been so satisfactory in the New England outbreak with the use of formaldehyde that they had unhesitatingly used in the second outbreak.

A paper on "Mange in Cattle" was read by Dr. Paul Juckniess, Deputy State Veterinarian, Lincoln, Nebraska. In defining this disease, Dr. Juckniess said:

"Cattle mange or itch is a specific disease of the skin and is caused by the mange parasite *Psoroptes Communis Varietas Bovis*. This causes inflammation and irritation of the epidermis, which is a characteristic symptom of the disease."

Symptoms by which it might be recognized was an intense itching with tossing of the head toward the infected places, usually the neck and shoulders. The greatest difficulties experienced in eradicating this disease were (1) lack of sufficient laws regu-

lating this disease; (2) lack of sufficient appropriation for securing competent men to handle the disease; (3) the stockmen resisting the enactment and enforcement of laws for stamping it out. These difficulties were being overcome by the co-operation of the government by which compulsory laws have been enacted and a uniform dip recommended and the appropriations which have made it possible for competent inspectors, familiar with mange in all its phases, to go out and assist in supervising the dipping, and stockmen have thus become familiar with the methods of dipping. On account of the rapidity with which it spreads it is important to detect it in the early stages. He believes that the best results are accomplished by having the dip hot 105 to 110 degrees F., as less damage is done by having it too hot than not hot enough, and seeing that the cattle are thoroughly immersed, holding them in from one to two minutes in order to soak the crusts and penetrate the hide, and then repeating the dipping in ten or twelve days in order to kill any mange mites hatched after the dipping. The strayers or cattle not dipped in the first round-up, should be watched for and the premises thoroughly cleaned and disinfected. In Nebraska the cattle are infected with lice as well as scab parasite and sulphur and tobacco is found to be efficient for both, and is very popular.

In treating the subject of tick eradication, Dr. Cary divided his subject into three parts: (1) The Method of Application, (2) Picking of Ticks, (3) Rotation. He stated that of the various dips, he had not found coal-tar dip very satisfactory; that, while arsenical dips were all right as far as the results were concerned, they might prove dangerous in the hands of ordinary men, and were really no more effective than oil preparations, the difficulty in the use of oil preparations being their variable composition and consequent various effects on the cattle and on the ticks. He believes that best results are achieved by dipping once a week. Picking is just as important as the use of dips in this eradication. In discussing rotation (having summer and winter pastures) he thought that the inspectors should keep in mind that different advice should be given not only in different states, but often in different sections of a state on account of the agricultural conditions; he should be able to tell the farmer something about the crops, how he can feed and pasture his cattle. And by working along the lines of least resistance, the opposing counties will soon be surrounded and will become anxious to have the work done there.

In the discussion several points of interest were brought out. Dr. Nighbert after a brief talk gave the following conclusions: that the ticks can be eradicated; that the greatest hindrances are the people who do not yet realize that the cattle tick has hurt them financially; the educational feature—time and persistency on the part of each individual engaged in the work are essential; and that drastic laws, federal and state, controlling the movement of quarantine cattle will accomplish a great deal.

Mention was also made of the lack of co-operation from men whose chief industry was along other lines than cattle, such as cotton, fruit, etc., who did not see the urgent need of eradication measures in their few head of cattle not appreciating that other and larger herds, whose owners made cattle raising their business, might become infected, and cause their owners great financial loss.

Dr. Ransom in his paper on "Arsenical Dips for Cattle Ticks" pursued the subject treated by Dr. Cary, stating that due to the risk attending the use of arsenic, the U. S. Department of Agriculture has never approved arsenical dips for sheep scab, and others less dangerous and more effective are preferred, such as tobacco, lime and sulphur, and coal-tar. Speaking comparatively of experiments made in different localities of solutions of arsenical mixtures, crude oil in soap emulsion with water, and a combination of the arsenical solution and oil emulsion, he said he had found results varied considerably, but in no case were all the ticks killed with one application of any of these dips, and in Texas the last was found most injurious. The arsenical mixture was less injurious than the oil emulsion. It was noted that the eggs laid by the ticks after dipping were fewer and a smaller proportion hatched than from eggs of undipped ticks.

These experiments proved that the arsenical dip, while useful where cattle need not be freed from ticks immediately, could not be substituted for oil where cattle are dipped previous to moving to a non-infected area. The oil dip not only destroys the ticks present at that time, but also protects against infection longer than arsenical dips.

Similar experiments made in Oklahoma proved the arsenical dip most successful, the oil emulsions a failure, coal-tar and creosote dips at double strength less effective than arsenical mixtures and more injurious to the skin.

In a laboratory experiment on ticks removed from cattle, some of those dipped in an arsenical mixture died without laying eggs;

some laid them several days later than the undipped ticks and many less. Two calves artificially infected were dipped and a third calf similarly infected was not dipped. Arsenical dip was used and the result showed the dipped animals laid fewer eggs and fewer hatched.

Discussion brought out the practicability of the hand spray as the inspector would then remove the large ticks, although for large herds the tank was preferable; the hopelessness of having the work done if the dip were put in the hands of the average owner; that ticks would not mature if treated every two weeks; that there was no danger to the cattle if the head went under and no loss of poultry; and the danger of driving the cattle too soon after dipping, ten days being a safe time.

Dr. Melvin reported on "Work of the Various States in Immunizing Against Hog Cholera," that eleven states have each appropriated over \$1,500 per annum for carrying out serum production; many are working without appropriations, but all report good results. Where failures have occurred in the treatment of hogs during the past year, it has not been due to the method but to low potency of the serum or the failure to give the required dose. Serum from immunized hogs is more of a protective substance than a cure and to do most good must be administered early in the outbreak. In speaking of the serum simultaneous method Dr. Melvin said: "In the case of the serum simultaneous inoculation, only carefully tested serum should be employed, and the herd should be kept under observation for two weeks after the treatment, so that the entire herd may be given serum alone if signs of illness follow vaccination." Referring to disinfectants for this disease he stated that carbolic acid in the presence of albuminous substances is not a satisfactory disinfectant for hog cholera, nor is bichloride of mercury. The disinfectant known as Cresolis Compositus is excellent. In closing, Dr. Melvin said:

"Looking over the work of the past year, we find no reason to believe that our previous results have been based upon error, but are rather more confident than ever that in this serum from hyperimmunized hogs, we have an agent which can be depended upon to protect hogs from hog cholera and which should serve as the basis for an energetic campaign looking to the eradication of hog cholera."

In the subject, "Control of Glanders," Dr. Schoenleber said it was necessary to consider in the control of any contagious dis-

ease three things: (1) The character of the contagium and special conditions favoring or retarding its development; (2) the origin of the disease and the methods in which it spreads; (3) the methods available in locating and limiting the disease. The sources of the disease of glanders are: Poor housing with lack of sunshine and fresh air; the grading gang, where the horses are in close contact and have little power of resistance due to overwork, and the drinking fountain. In the control of the disease, he recommended the abolition of the drinking fountain and watering trough; quarantine against importation of uninspected animals into the state, and destruction of all diseased animals.

In the application of mallein where there are no clinical symptoms three reactions may be looked for: systematic, thermal and local. If all three occur the diagnosis is easy, but it is scarcely reliable to condemn on one; that the first may be so slight that it is not observed, but means much in connection with the other reactions toward proving the case; a thermal reaction occurs independent of the presence of the disease, therefore cannot be relied on alone; and the local seems to be the most constant and reliable. An animal might have this disease for several years, infecting other animals all the time, but his own symptoms so slight that no precautions were taken.

In the discussion it was generally conceded that the abolishment of the public watering trough would be a good thing everywhere, and in many places it has been done. In St. Paul and Minneapolis faucets have been substituted and teamsters carry their own pails; in many cities the fountains with constant outflow as well as inflow have been adopted. Also that a moderately worked horse well fed and kept in good condition is less liable to develop the disease in a clinical form than a horse kept housed and breathing impure air. The disease may usually be detected by an unusual rise in temperature and all horses showing a rise of 104 should be destroyed.

Dr. Luckey, in his paper on "Progress of Tuberculosis Eradication Work in Missouri," told of a sanitarium erected there for its study and treatment; of the co-operation of the whole state that had been secured, the people facing it calmly and with determination; the provision made for cure or for comfort where no cure was possible; the passing of a "Vital Statistics Law," which makes possible full knowledge of the contagious diseases and the progress made in the eradication; of another

law providing for prompt disposition of tuberculous cattle, and thus removing danger from the human race. Men are now asking if the cow they are intending to buy is afflicted and the inhabitants of towns ask whether their milk and butter is from healthy cows.

Dr. Dyson in further pursuance of this subject stated that the cows seldom showed physical signs of the disease in its early stages and it was soon spread to other cows, with the milk of all being used right along and not until it was sold for meat, which was not while it was a good dairy cow, was it tested and then it was rejected as unfit for food. That the people will not use the product of cows showing signs of lumpy-jaw or abscesses, but in fact they were not nearly as dangerous to the human race.

The greatest opposition toward eradication comes from the owner of large herds, too ignorant to conceive the danger and those holding public office through those men who have no regard for public health. By offering an incentive to dairymen with large healthy herds to enlarge upon his product of wholesome milk, much good might be accomplished among dairymen.

Dr. Evans spoke of the close relationship existing between the veterinarian and public life. He pointed out the fact that the fight against tuberculosis was not only in the bovine world, but for child-life, and the improvement of factory conditions and tenements. He told of the many hospitals in the city of Chicago and in Cook county for those afflicted, especially those who were no longer able to care for themselves; and that the disease was not only prevalent in the tenements and poorer districts of the city, but from the better localities, in fact from all parts of a city, and every effort is being made to eradicate the disease; the charitable people and organizations and churches, subscribing to and maintaining hospitals.

The subject of "Nerve Irritation as a Factor in Tuberculosis Extermination," by Dr. C. G. Lamb, touched upon a new side of the question—that of teaching them the loss there would be to stockmen if they did not clean up their own herds, and by thus appealing to their pocket-books, bring about better results to man and beast. Less opposition would be met if the state or municipality would pay for the necessary test. This is the great work of the present century and the importance of saving the human family by eradicating the disease from food-producing animals cannot be overestimated. It is more state than national work, but the national government will render every possible as-

sistance. The people must be educated in regard to it and those most easily influenced by self-interest followed up. Make the movement, sale and use of all animals known or suspected to be diseased with tuberculosis as difficult as possible, and demonstrate to the owner that it is for his own benefit to remove suspicion from his herd and obtain a test.

Dr. Nelson in the "Proper Methods of Disposal of the Carcasses of Animals Dying from Contagious and Infectious Diseases" said that the disposal of these carcasses depended upon the facilities available for disposal and the disease. The question is simple in cities that have crematories, the precaution necessary in such cases being in regard to conveying the animal to the crematory. Where an animal is buried and there is danger of dogs digging up the carcasses, they should be covered with lime before the earth is thrown over them. Burning an animal on a straw stack where straw is not valuable is a favored mode of destruction in the West for diseased carcasses. Destruction by burning over trenches is a good method and where it is impossible to obtain wood, straw or other common fuel, sage-wood or greasewood is placed around the carcass which is slit open and saturated with kerosene.

Dr. Melvin spoke of the importance of this paper to farming districts in the West where proper disposal is not made and the disease is spread by dogs which have access to the carcasses. Dr. Lewis spoke of spreading by buzzards in Mississippi where carcasses are left exposed, and in this connection a resolution was offered for the repeal of laws making it a crime to kill buzzards. In some places carcasses are simply thrown into the river. It was suggested that where no fuel could be obtained, if iron or green wood pieces were placed over a trench and the animal laid thereon, slit so the fat would run over it, it would burn enough to destroy all danger of infection. The fact that germs would continue to live under ground and showing the virtue of quicklime, was suggested.

Dr. Mayo on "Sanitary Work in Cuba" was especially interesting, pointing out the intimate political and economic relations existing between the United States and Cuba and their constant growth, making it advisable for the sanitary conditions of Cuba to be considered by the United States. He said that while they have an abundance of laws, they were not enforced, and they needed revision and simplification, although a situation could usually be controlled by some measure. An effort had been made to

gain the confidence of the farmers and stockmen by proving to them that they could really help them, and to educate them along the correct lines, but this had been slow work for a number of reasons, some of them could not read; their breadth of view is smaller than we are accustomed to, and their spirit of procrastination. Dr. Mayo called attention to the fact that he spoke of these, not as faults, but as important differences between the two countries. That the fact that he was a foreigner had been more of a help than a hindrance, as they were aware of the attitude of the United States government toward them and the work of the American army had inspired confidence. The cattle industry had practically been destroyed in 1895-98, and in the heavy importation following the war no attention was paid to sanitary rules, and it is remarkable that only one serious disease seems to have been imported—that of blackleg—which was not known to exist in Cuba previous to the war. Careful watch is kept for the presence of any transmissible disease due to blood parasites, but none have been found so far. A laboratory has been established under the supervision of the National Sanitary Department for the manufacture and distribution of anthrax and blackleg vaccine. As a result of circulars sent out regarding these diseases, the use of these vaccines is general, and the results obtained excellent. Vaccine is sent free to all stock owners requesting it. Live stock in Cuba suffers severely from attacks of parasites, ticks, screw worms; intestinal parasites are common, and the tick is the greatest pest. They are using arsenical solution recommended by the Department of Animal Industry.

Dr. Mohler on "Veterinary Tetanus Antitoxin with Special Reference to Federal Supervision of Biological Products."

"Of the various biological products prepared for the cure and prevention of infectious diseases, tetanus antitoxin has probably been most extensively used by the veterinary profession."

However, Dr. Mohler states, the divergent results obtained by various practitioners have kept it from gaining favor with veterinarians. This was probably due to the variation in the strength of the product, and it was decided to undertake the standardization of veterinary tetanus antitoxin prepared by different manufacturers and to determine whether they were subject to any variation in strength; and the result clearly demonstrated the variations in the potency of veterinary tetanus antitoxin at present on the market. Dr. Mohler said:

"The object in presenting this paper is to furnish a concrete example of the variation observed in this particular product at present on the market and to show the necessity for federal supervision of all vaccines, serums, antitoxins, viruses and analogous products including mallein, tuberculin, anthrax, and black-leg vaccine and hog cholera serum."

The investigation was carried out in accordance with an Act of Congress providing that the Secretary of Agriculture should purchase in the open market samples of these products for cure and prevention of disease, whether of domestic or foreign manufacture and test them and publish the result of said tests. But no authority was given with reference to the supervision and control of their manufacture.

With the discovery of the tetanus bacillus and its cultivation, its true cause was established. It was found that the organism is not present in the blood of animals dying of the affection, and the fatal results are produced by intoxication and not by the infection; in 1892 a successful immunizing method was worked out. In tetanus, unlike most of the other infectious diseases, the infection by the organism does not exert the destructive influence, but only the toxine of the organism is responsible for the serious results of the disease. The bacilli therefore produce a specific substance which has the toxic effect. This conclusion was arrived at as the result of experiments on mice, guinea pigs and other animals. Horses and sheep can be successfully immunized against tetanus and produce an active immunizing serum; horses are now exclusively used for the production of tetanus antitoxin.

With the establishment of the principles of immunizing against tetanus, it became necessary to adopt a method by which the potency of the antitoxin could be accurately determined. What is known as the "American Method" has been officially adopted under the biological product act of July, 1902. In this method the immunity unit for measuring the strength of tetanus antitoxin is fixed so that it shall be ten times the least quantity of antitoxin serum necessary to save the life of a 350-gramme guinea pig for ninety-six hours against the official test dose of a standard toxin furnished by the Hygienic Laboratory of the Public Health and Marine Hospital Service. Manufacturers of human tetanus antitoxin must state the number of units their products contain which insures serum of reliable strength and establishes a uniformity among the producers of tetanus antitoxin in America; but the antitoxin destined for veterinary use is still under no control and

there is no uniformity in the method, and the potency of the product is left to the honesty of the manufacturer; these manufacturers should be required to use the American standard and to state on the label the number of American units the dose contains, and the request for such requirement should have the endorsement of the veterinarians and live stock interests of the country.

MINNESOTA STATE VETERINARY MEDICAL ASSOCIATION.

The meeting was called to order at 2 p. m. January 12, 1910, by President Cotton. The registration blanks signed at the door showed 55 members and 17 visitors in attendance.

Secretary Leech read the minutes of the last meeting held at Stillwater in July. The same were approved. President Cotton then presented the following address:

PRESIDENT'S ADDRESS.

Gentlemen and Members of our Association: As your president, it is my duty to present you a few thoughts which impress me as necessary for the upbuilding and welfare of our profession and of this association.

I desire now to thank you for the honor you conferred upon me by electing me your president at our last annual meeting—an honor that I assure you is appreciated by me.

During the past year the association has suffered a severe loss in the death of one of our charter members, an ex-president, Dr. Richard Price. I am sure we all felt a sense of personal loss of a true friend. The profession and this association have lost a member of sterling worth, a broad minded gentleman with a wide and varied experience, who was always ready and anxious to help a brother in the profession; always ready to do more than this part for the welfare of this association. At our annual meeting, resolutions were adopted by the association, and ordered spread on the minutes.

Not since the death of Nocard has the veterinary profession of the world received such a shock as the news of the death of Dr. Leonard Pearson. We had all been cheered by the report of his slowly improved condition, when the message of his sudden death came.

Dr. Pearson was probably given more recognition by the veterinary and medical profession of this country and Europe than any veterinarian in this country. He was a man of lovable character, high minded and great executive ability, which was demonstrated by the building up of the best organization in our country for the state control of contagious diseases. He was dean of the Veterinary Department of the University of Pennsylvania, and in all probability that institution would not be in existence now had it not been for his untiring efforts with the University authorities, and the state legislature, and his success in interesting moneyed men in endowing the department. A few years ago, he told me, that he had abandoned all thought, of obtaining any of this world's goods, and that his life would be devoted to the profession, and to the Veterinary Department of the University.

It seems fitting that this association at this time adopt suitable resolutions on the death of Dr. Pearson.

Our profession the past year has prospered for the reason that the people throughout the state have been prosperous, and the services of the educated veterinarian are being more generally appreciated by the owners of stock.

Veterinary education in America is certainly on a much higher plane than any of us anticipated ten years ago. The veterinary colleges, as a rule, are doing splendid work. Not only the state institutions, but the majority of the private schools, are gradually raising the entrance requirements, and are building a more scientific, basic education for the young man, who is preparing himself in veterinary medicine.

I wish at this time to recall a few facts about the relation the veterinarian and this association should have to the public, and its welfare, as regards the control of the various diseases of animals that are communicable to man.

You all know something of the hard fight that was made during the last session of our legislature. The majority of the members of this association volunteered to take off their coats—and did do so—to help put down any legislation that might interfere with or put a stop to the control work that had already been undertaken by our sanitary board.

The senator who introduced the bill and made the fight which would virtually put a stop to the use of tuberculin, as a diagnostic agent, used as an argument, very convincing to the layman, that he and his cohorts had watched the test work care-

fully, had used some questionable methods in "juggling" with the tags of condemned animals, and had concluded from their findings that the test was not reliable. They stated that tuberculin did not begin to find all the diseased animals in a herd; that they had found a number of diseased animals in cattle that had been passed as free from tuberculosis. This was one of the hardest arguments we had to refute or overcome. We had to concede that very, very rarely an animal would fail to respond to the test if it was badly diseased, and the disease well advanced.

At the autopsy of the tested cattle killed before a committee from the legislature, all animals that reacted showed lesions, and in those that had not reacted, no lesions were found. The Senator and those who were fighting the test work had a member of this association representing them, and in an interview after the autopsy, this member said: "I still maintain that the tuberculin test is not conclusive in proving the presence of tuberculosis in animals. Senator Sundberg had nineteen head of cattle, and the fact that five of the animals showed no reaction after the test does not prove that they are free from the disease. We know from past experience that a cow may be badly diseased and still show no reaction. One of the condemned animals to-day showed no tubercular lesions, and Dr. Ketchum did not find any while I was there."

In answer to a question as to whether or not he thought the test had been properly made, he said he was not disposed to question the test. "I could find no traces of disease in the twenty-five cattle that were passed as healthy animals, and I admit that traces of tuberculosis were disclosed in thirteen of the fourteen animals condemned by the state board. The only point that I make is that the tests are not infallible."

It was certainly proper, if he wished, to represent these people as their veterinarian, but I cannot but feel that he did, not only himself, but the profession, and the only scientific test that we have for tuberculosis a great wrong and injustice. It would seem wise to me if this association would take some action censuring such work by its members.

Again allow me to express myself in regard to the tuberculin test. Our cities are demanding that before an owner can ship milk into market, he must show a certificate from some qualified veterinarian of a tuberculin test. Naturally the owner feels it a hardship and he does not want any cattle condemned. He employs his veterinarian to make the test. Of course, we are all

human, and it is natural that the veterinarian should wish to protect the interests of the owner who employs him, and he may be inclined to give him the benefit of a doubtful reaction; but, gentlemen, such work is neither to the interest of the owner nor to the credit of the veterinarian, and above all, it reflects on the tuberculin test.

Another practice that should be discountenanced by the association, is that of improper, and dishonest testing by veterinarians. We have history of tests in which the veterinarian took one temperature before injecting the tuberculin, and one the following morning, and gave the owners clean bills of health for their herds. But in sending in a record of the test to the State Live Stock Board, they gave a record of two preliminary temperatures and five temperatures after injection. The use and validity of the tuberculin test can never be sustained by this profession if we continue such practices as these.

The medical profession and numerous societies are undertaking to educate the public mind to believe that if they will observe the simple laws of sanitation, cleanliness, etc., it will go a long way in the control of tuberculosis in man. Our profession and every member of this association should feel it his duty to do all in his power to aid this work for the preservation of public health.

There is some difference of opinion as to the identity and transmissibility of bovine and human tuberculosis, but a large number of our scientists believe they are identical and transmissible from one family to another. The most conservative, and those who at one time insisted that the bovine tuberculosis could not be transmitted to man, now believe and concede that it is in a certain number of cases. The bovine type of tubercle bacilli are frequently found in tubercular glands, especially in children. It is now generally believed by authorities in human medicine, that at least three per cent. of all cases of human tuberculosis come from cattle. Agriculture and livestock are the mainstay of this country, and they cannot continue to succeed without proper control of contagious diseases, and we have got to educate the people and the legislature to this fact.

Our profession is recognized as the guardian of the live stock industry, and if we do our part in this campaign of education, we will be recognized as of material aid to the medical profession in the preservation of human health. It is only a question of a very short time when, through education, the public are go-

ing to appreciate the fact that the system of meat inspection now carried on by the Federal Government for inter-state trade only is a source of danger to local consumers, because, owners having cattle, hogs, or sheep for slaughter, if they are afraid of the inspection, will have animals slaughtered at local abattoirs where there is no inspection and the public are going to demand that the system of Bureau inspection be extended to include all meats offered for sale. This much-to-be-desired result will come with the education of the people, and this association should be foremost in that education.

Our legislators are sure to pass a law providing for meat inspection, and a large majority of them have no knowledge of the subject; therefore it is the duty of this association to direct such legislation.

It has been said by some of our members that in the past too much time has been devoted to routine business, committee reports, etc., at the expense of the literary portion of our programme. I think a great deal of our business could be delegated to committees and thus much valuable time be saved. The secretary, through untiring efforts has succeeded in obtaining a more extended program for this meeting, and it was thought necessary to have a three day meeting, in order that more time might be given to the papers and their discussion.

The social features of our meetings should not be overlooked. It does us all good to come in personal contact with men who are engaged in the same work, to exchange confidences, profit by other's experiences and mistakes, and to renew old and make new acquaintances and friendships; and we go to our homes feeling stronger and better prepared to continue life's battle.

DR. LEECH, AS SECRETARY, REPORTED AS FOLLOWS:

Mr. President and Gentlemen: Just one year ago I remember very well Dr. Ward standing up here in this room adjoining and saying, with all due respect to previous secretaries, that we wanted a live secretary. However, I objected to taking the position on that condition, and while I was more than overloaded with work, I finally had to comply with your request. How well I have succeeded in doing that it remains for you to determine after this meeting is over. We have completed two banquets during this last year, as well as the last semi-annual meeting. I believe there are those here to-day who can speak for themselves as to the credit of those two entertainments. It

will remain for you to give your decision when this meeting draws to a close.

During the year this office has handled in all over \$600.00 of money from this society, from all sources. The expenditures for this society have been something over \$500.00, leaving us quite a snug balance in the treasury at this time. But at the last meeting it was recommended that the dues should be raised to \$2.00, in order that whoever might be secretary, should have within his hand that which would give him the power to increase the program materially, and as such he would then be endowed with power, to call in from the outside such men as would be entertaining and would give subjects of interest to the society. That was the argument used in increasing or recommending the increasing of dues. This matter was taken up at the Stillwater meeting, and voted to increase the dues to \$2.00 per year, of which I think nearly every one has received a notice.

That will give us a good working basis by which we can put this society upon a first-class firm footing, both financial and social. I hope my successor will be able to give you something better than I have given you during the year. It has been my good fortune during the last year to be able to secure something very good and first-class, without a great amount of expenditure, therefore our expenditures have been kept down to a reasonable basis. The outgoing secretary turned over \$160.00 as nearly as I can remember without looking at the report, and you will see that we have not increased our expenditures because we have over \$100.00 in the treasury; there has been extra expenditure this year, but I have been able to secure this time, from outside source, quite a good deal of material without a great amount of outlay. This cannot be done every time, but knowing the condition financially I have been able to secure those people upon the program which I hope will be interesting to you and will meet your endorsement.

The labors of this office are getting quite laborious. There have been during the year over 800 packages of all sorts mailed out of the secretary's office with an expenditure in the neighborhood of \$20.00 for stamps. You will see that it means something for a typewriter and secretary to do.

I would recommend that every member use their influence to secure membership from those who are known to them. It is not always possible that the secretary shall be in touch with every new member of the profession. If you know of men

within your reach or realm who are suitable for membership in this society, I would urge upon you the necessity of trying to get them into the society, because, by increasing the membership in the society, we increase our financial standing, and at the same time we increase our material to draw upon to make a better program in every way. I would also recommend that a better interest should be taken among members for program material. There is hardly a member in this society, who cannot write something of a paper, who cannot give something of a case report, who cannot within the year have some thought that would be of interest to those of the society, and have that in his mind so that when the secretary calls on him he can respond. Those practical matters, coming before the society, will be of more interest than those coming from professional sources (that is men representing scientific work), and that will give a better feeling among those members who are practicing in the field, and I would recommend every man to use his influence to get people interested in that line. I do not like to say it, but if you had sent out ninety letters, with requests for papers, and received only replies from five to seven men, saying that they would give papers, it would be rather discouraging.

THE REPORT OF THE COMMITTEE ON COLLEGES

was given by Dr. Mack, chairman, who presented a very able and lengthy report covering all the ground of investigation made by the committee appointed by the government on college investigation, as well as all the improvements made since that time at the suggestion of said committee. The report was adopted.

REPORT OF INFECTIOUS DISEASES COMMITTEE.

J. G. Annand, Chairman; T. Lambrechts.

In the absence of Chairman Annand of the Committee on Infectious Diseases the president requested Secretary Leech to read the report, and then called upon a number of gentlemen to speak on the subject.

Glanders.—During the past six months there have been 1,251 horses inspected; 683 horses were tested, of which 119 were killed on account of reacting to the test.

Tuberculosis.—Since July 1 to December 31, there were 6,001 cattle tested for tuberculosis, of which 313 reacted.

Hog Cholera.—A few outbreaks of hog cholera have been experienced, and the disease has been controlled by the use of the serum method of immunization.

Anthrax.—Two outbreaks of anthrax were reported; one in the northern part of the state, and one in Dakota county. All animals on the farm were properly vaccinated and the disease promptly checked.

President Cotton first called upon Dr. Ward.

Dr. Ward—I have nothing new to offer on infectious diseases. The report as given by Dr. Amand covers the number of outbreaks which we have encountered during the past six months. We have had two outbreaks of anthrax which were investigated by Dr. Beebe, and all animals on the premises were vaccinated. We have had numerous reports of swamp fever, probably more in the last three months than we have ever had. This is probably due to the season more than anything else. Upon being asked by the president if he could at that time make any statement as to the results of the experiments of the Board with outbreaks of hog cholera, Dr. Ward replied: Where we have encountered outbreaks of hog cholera, we have suggested to the people surrounding the outbreaks that they vaccinate their hogs as a preventive against the disease. In a great many cases the farmers took advantage of the vaccine and sent to the Experiment Station and secured same. The cost is about 50c. per dose, and is sent out by Dr. Reynolds, C. O. D., and the Board has endeavored to show the veterinarians (in centers where the disease was prevalent) how to do the work. So far my opinion of the method is that it is undoubtedly the only thing that will stop the spread of the disease, if the serum is good, and work done by veterinarians. We have not done as much work with the vaccine as we would have liked. The State Experiment Station got \$10,000 from the legislature and a part of it is being put into buildings for the purpose of keeping hogs and manufacturing the serum. I think the sanitary board used up the serum as fast as it could be manufactured at the Station. I presume next year the Station will get out a greater amount than they did last year.

The President then called upon Dr. D. B. Clark, of Wisconsin.

Dr. Clark—I have not come prepared to give statistics showing the work done in Wisconsin, but since the first of July there

has been somewhere about 8,000 cattle tested in Wisconsin, with over 300 reactions. Last year 43,700 cattle tested, with 2,998 reactions. There were 33 horses killed with glanders last year. I do not remember the number that has been killed so far this year. There were six animals affected with Johnne's disease last year, and this year we have killed about four so far. One thing very interesting is that all the cattle killed with this disease so far have been Guernsey cattle. Now, whether that has been brought over from the old country and kept among those breeders I do not know. I will take that back, as there has been one Shorthorn, and all the rest have been Guernseys. I would like to know if the statistics in Minnesota have been the same. We tried to get our State Legislature to appropriate some money, but you people in Minnesota appreciate the position of the Sanitary Board in Wisconsin. That there has been considerable rivalry between the sanitary board and the university. The members of the legislature said that work should be done by the university, and not by the sanitary board, but adjourned without making any provisions for the university to take up the work.

As yet we have not done anything to control hog cholera, other than to quarantine the premises. There have been in the last year two outbreaks of anthrax; one on our State University Farm and one in Racine in the south portion of the state. The animals on the university farm were all immediately vaccinated. In the vicinity of Racine we lost about 8 or 10 cattle, and all remaining cattle were vaccinated. One man in the vicinity of Racine contracted what the physicians claimed to be anthrax, and he went to the hospital for two weeks. He returned much better and the veterinarian at Racine told me he would let me know if he died, and as I have not heard, I presume he is living yet. It might be interesting to you to know that one case recovered from anthrax.

Dr. Cotton called on Dr. Beebe for remarks as to Johnne's disease.

Dr. Beebe—We have only had three or four outbreaks that we have been able to follow up. One of those was in Wisconsin, and that outbreak was among Guernsey cattle, all pure bred. I know of another outbreak in the northern part of this state. They were all grade shorthorns. It is not in any particular cattle, in fact I know of some places where it has been in grades and in scrub cattle, so-called.

Dr. Clark—I do not want to be understood as thinking that the Guernseys are more susceptible to it, but it has been our experience in Wisconsin, except in the one case, the animal was a shorthorn.

Dr. Cotton called upon Dr. J. P. Foster, of South Dakota, for a talk.

Dr. Foster—In territory assigned to me at the present time, the efforts of the Bureau of Animal Industry are directed principally toward the eradication of scabies in cattle, although a certain amount of work is being done along other lines. Asked in regard to anthrax in South Dakota, Dr. Foster said: There was a great deal of anthrax in the southeastern part of the state during the summer and fall of 1908 and some in 1909, but I have not heard of any trouble of this kind for several months.

Dr. Cotton called upon Dr. E. J. Davidson, of North Dakota.

Dr. Davidson—I do not think I can give you very much information. I expected Dr. Crewe, our State Veterinarian, to be here. I do not know what the situation is this year. Last year we had over 1,000 head of horses killed on account of glanders. I have not heard of any anthrax. We are gradually cleaning up glanders, and expect to do a great deal better. We had no appropriation until last year, and pay now about \$50.00. We cannot appraise a horse over \$100.

Dr. Ward, chairman of the committee on Legislation and Empirics, stated that he had nothing to report. He said: There has been no legislation during the past six months, and as far as the empirics are concerned, Dr. Reynolds has looked after it, and the examining board has made a report showing a number of empirics.

President Cotton then asked him if it would not be a good time for him to explain the new law about pure-breds, which went into effect the first of January, this year.

Dr. Ward—I think most of the members of the association know that the law passed a year ago. This law requires that all persons selling pure-bred cattle, or cattle represented to be pure-bred, shall furnish the buyer with a certificate of health certifying that the animal has been tested, which certificate shall be made out by the Live Stock Sanitary Board, certifying that the board has tested the cattle, and they are free from tuberculosis. This law did not come into effect until the first of the year, as it was thought best to give the breeders nine or ten months to prepare for it. So far we have received a great many favorable com-

ments on the law. There are, of course, one or two who are somewhat opposed to it, for the very simple reason "I presume," that tuberculosis is present in their herds, and they do not want the fact brought out. We have tested a great many herds, probably 400 cattle in the last six weeks, with about 36 reactions. These were herds which had never been tested. We ran into two bad herds, one herd in particular which was put up at auction two or three weeks ago, but the cattle were not delivered until the certificate of health could be given with them. The result is the cattle were killed yesterday at South St. Paul, and the owners are minus their purchases. It is the best law so far as the conservation of live stock interests are concerned. It means that when people buy a pure bred animal, it will be like a man purchasing a horse—and he will want to know that it is absolutely sound. Heretofore people have neglected that part and bought where they could to good advantage.

Dr. Gould—I would like to ask Dr. Ward if the local veterinarians are supposed to test cattle and issue a certificate?

Dr. Ward—The law requires that the tuberculin test certificate shall be made out by the Live Stock Sanitary Board.

Dr. Amos—I would like to ask if a certificate by a local veterinarian would be honored by the board; one of my patrons made that inquiry the other day.

Dr. Ward—There is no reason why a local veterinarian should not be permitted to make the test. The sanitary board vouches that the test was properly conducted, that the animal did not react, and consequently if the state has to back the certificate of the local veterinarian, it will be necessary for the state to have confidence in the local veterinarian who makes the test, and to absolutely depend upon the integrity and conscience of the veterinarian who does the work. In that case the state will honor the local veterinarian's certificate.

REPORT OF COMMITTEE ON BACTERIOLOGY.

W. L. Beebe, N. Y. S. V. C., St. Paul, Minn., Chairman.

One announcement I would like to make at this time, although it does not properly belong to this report, and that is that the State Live Stock Sanitary Board has established a laboratory in the Old Capitol, so that hereafter when you send in specimens, please send them to the Old Capitol, instead of the Experiment Station. Specimens should never be sent by mail. The postal regulations are so strict, that if you comply with them

it would take too much time, and the average veterinarian is not in position to have the necessary requirements. They require that they shall be sent in a carton, and then inclosed in glass inside of that, and that is too delicate for the average man to take care of. Please send specimens by express, and we will get them as soon as though sent by mail.

Another thing, send specimens in a container that has a tight bottom, usually a tobacco or candy pail is satisfactory. Very frequently, I get specimens of a dog's head sent in a wooden box, and the blood is leaking through the box.

This evening we are to have a paper on anterior poliomyelitis, or infantile paralysis. I believe Dr. Shore is going to show, that infantile paralysis is the same disease as he has in his locality in horses. I would like to say that Dr. Flexner has been able to demonstrate the cause of the disease. He has been able to pass through a clay filter a virus and reproduce the disease in monkeys. He is able to take the germ from the spinal column, and after an incubation of 24 hours, get a cloudiness in the fluid, and from that fluid he can carry this to the second generation, and get a cloudiness, and that second fluid he can inoculate monkeys subdurally, and get the disease, so he has proven quite conclusively that the disease is due to an ultra-microscopical organism.

When he makes the stain from this fluid he is only able to get haziness; probably organisms are there but size and shape cannot be determined. The other day I happened to be called to an outbreak of trichinosis. This does not properly belong to a report on bacteriology, but owing to the fact that we have no zoologist in the association, I would like to give a brief outline of it. This occurred in Goodhue county in this state. Last spring the man who owned these hogs, noticed that they were not well, and were sore when forced to move about the pen, and some of them got very poor, but finally they appeared to recover. with the exception of one, and he thought they were all right, so he killed one of them on November 29 for his own use. They were German people, so the wife started to make some summer sausage on the following day. and in process of making she tasted it to see if it was of the proper flavor, and eight days after she became sick. The day she became sick the family began to eat the sausage, but it was not smoked enough. On the tenth day they were having a bee there, and several of the neighbors ate of that summer sausage for dinner. Eight days later all

of the people who ate the summer sausage became sick, but the people who ate it two days later did not get sick, so probably the smoking killed off the trichinæ. Now the symptoms that these people showed are quite similar to typhoid fever. They had a fever of probably 102 and 103, and were generally malaise, had loss of appetite, and several had an eruption on the body. Another thing was very marked, soreness in the muscles, and if they move a finger there was such soreness that they would holloa. They have been sick about five weeks now, and one or two have an eruption similar to measles. Physicians who had these cases in charge obtained some of the meat that was eaten and were able to find the trichinæ in the meat. I obtained some of this meat, and to-morrow morning I will have a microscope, and if any of you care to, you may see the specimens in room 110.

Dr. Rogers—He just mentioned the fact that he found difficulty in getting the proper containers to ship a small bacteriological specimen in. In New Jersey the State Board of Health supplies these double cartons, the inside being a small glass jar, and we see to it that every druggist in the State of New Jersey has them on hand to supply free of charge to veterinarians or practitioners who wish to ship specimens or cultures to the state laboratory for examination. We also supply them with a little report blank. We find it works very satisfactorily. The druggists are glad to co-operate with us, and all around it works very nicely. It struck me that our New Jersey idea was one worth adopting.

Dr. Cotton—How large are these containers?

Dr. Rogers—They will hold about 25 c. c.

Dr. Beebe—That idea might be all right provided we could co-operate with the State Board of Health and get them to use some kind of carton that we use, but I think we could not do that, for they have their containers ready to ship out. Then, also, I fear it would not pay the druggist to keep them in stock, and furthermore, there are a great many farmers who send material in anything they can get hold of. In fact I have had them send in a piece of pork and wrap a letter around it. The veterinarians usually send specimens in pretty fair shape. The only objection I have is to their sending in a dog's head in a wooden box, which is liable to have the bottom drop out at any time. I wish they would not do that.

Committee on Surgery not present, report was deferred and Committee on Medicine had nothing new to offer.

Under the heading Legal Matters, the secretary furnished the association with a report which included legal opinions of the former Attorney General, policy in prosecution suits and a list of prosecutions under the law of Minnesota, which show that Minnesota veterinarians are well organized and are earnest in their desire toward higher veterinary education in their state and in a determination not to tolerate quackery.

Under head of new business, the following delegates to the American Veterinary Medical Association were appointed: Drs. W. Amos, Owatonna, and M. M. Fulton, Moorhead. Election of officers followed with the following results:

President—Dr. J. P. Anderson, Rochester.

First Vice-president—Dr. R. R. Donaldson, Argyle.

Second Vice-president—Dr. Edmund Mackey, So. St. Paul.

Secretary and Treasurer—Dr. G. Ed. Leech, Winona.

Board of Directors—Dr. J. P. Anderson, Dr. G. McGillvray, Dr. C. A. Mack, Dr. C. S. Shore, Dr. G. Ed. Leech.

January 12, 1910, 8 p. m.—Meeting called to order by President Cotton. The first number on the program was a stereopticon, "A Surprise."

Dr. Leech—This is prepared for your entertainment and consideration. Nearly all of the past presidents of the American Veterinary Medical Association, some of the prominent men we have in *our* society, and a few comic pictures of things and creations, which I think will be of interest to the profession, and with your consent we will now throw them on the screen. Pictures were presented, which were greatly applauded. Reading of papers followed.

SEMI-ANNUAL MEETING OF THE MISSOURI VALLEY VETERINARY ASSOCIATION.

The semi-annual meeting of the Missouri Valley Veterinary Association was called to order by the president, Dr. A. T. Kinsley in the New Casino, Kansas City, Missouri, at 8.30 o'clock Wednesday, February 2, 1910.

The roll call was dispensed with as registration was made at the door. One hundred and twenty-two members and one hundred and thirty-eight non-members, also about five hundred veterinary students, registered at the door.

The minutes of the previous meeting were adopted as printed in the *Missouri Valley Veterinary Bulletin*.

The Board of Censors having met at a call meeting at 7 o'clock P. M. Tuesday, had the following report to make:

The following names duly vouched for were favorably passed on: Colorado—Drs. G. W. Dickey, Colorado Springs; Chas. G. Lamb, Denver; A. W. Whitehouse, Ft. Collins; Geo. H. Glover, Ft. Collins. Missouri—Drs. B. W. Murphy, St. Joseph; C. L. Allen, Harrisonville. Nebraska—Drs. F. E. Rathbun, E. Watkins, Cambridge; C. S. Breed, Omaha. Iowa—Drs. A. H. Quin, Creston; F. E. Williams, Odebolt. Kansas—Drs. H. M. Graefe, Douglas; J. R. Jeffars, Ft. Riley; B. A. Robinson, Independence; C. P. Sneed, Kansas City; R. B. Doty, Peabody; S. S. Dunlap, Marysville; K. W. Stouder, Manhattan; T. R. Allison, Winfield; T. Symns, Hutchinson; J. F. Jones, Arkansas City; W. Symns, Hutchinson; G. T. Burns, Hepler; F. M. Hayes, Manhattan; A. A. Eastman, Osborne; O. O. Wolf, Ottawa; T. H. Brady, Overbrook. Indiana—J. L. Osborn, Culver. Illinois—J. M. Kaylor, Bang. Texas—F. E. Burns, Waxahatchie. Oklahoma—L. L. Lewis, Stillwater.

Moved, seconded and carried that the secretary be instructed to cast the vote of the association for these names read to be placed on the membership roll. The secretary then cast the vote of the association.

The following report upon the charges made against Dr. D. W. Nolan, of Wichita, Kansas, was presented: "After careful examination of all evidence pertaining to charges brought against Dr. D. W. Nolan, of Wichita, Kansas, for violating the code of ethics of this association, it is unanimously voted that the association be asked to expel Dr. Nolan from its membership."

(Signed) C. E. STEWART, Chairman.

R. EBBITT.

R. F. BOURNE.

C. R. WALTERS.

E. BIART.

Moved, seconded and carried that the report be accepted.

The following report was presented by the committee on revision of the constitution and by-laws:

FEES OF OFFICERS.

Art. IX.—All offices held in this association except that of secretary-treasurer, under the constitution and by-laws thereof,

are hereby declared to be offices of trust and honor to which no fee or emolument is attached, but other offices of emolument may be created.

Art. X.—The secretary-treasurer shall receive fifty dollars (\$50.00) per annum and actual traveling expenses, not to exceed fifty dollars (\$50.00) annually.

It was moved, seconded and carried that the secretary be authorized to collect dues from February to July, 1910, only, at the rate of \$1.00 per annum from each member.

The resignation of Drs. J. P. F. Smith, Kansas City, Mo., and A. T. Knowles, Louisville, Ky., were accepted.

The secretary then read a letter from Dr. R. P. Lyman, secretary of the American Veterinary Medical Association, extending an invitation for this association to elect one or more delegates to represent the association at the annual meeting of the American Veterinary Medical Association to be held in San Francisco, Cal., September next.

Moved, seconded and carried that the invitation be accepted and that the president be empowered to appoint two delegates. (These appointments will be made later.)

The first paper presented was one from Dr. D. M. Campbell, on the subject of "Sera and Vaccines." The doctor gave a lengthy paper on the subject, completely reviewing the subject up to date and drawing attention to many changed ideas (the result of recent research) among which are the views of some believing the stimulation resulting in the manufacture of anti-bodies in blackleg due entirely to the endotoxin. This discussion was followed by an excellent paper on the subject of "Synovitis." by Dr. H. J. MacCartney, of Alba, Mo.

Dr. D. B. Leininger, Kansas City, Mo., presented a carefully prepared paper on the subject of practical horse shoeing. This paper brought out a good discussion.

Dr. D. F. Luckey, state veterinarian of Missouri, then gave an excellent talk on the subject of "The General Welfare of the Veterinary Profession." He discussed the problem of uniformity in laws of states in regards to contagious diseases. There should be fixed a uniform price of charge for inspections of animals going from one state to another. The state men having this work in hand should meet and decide on a uniform certificate.

A system was advocated that will allow healthy animals to be shipped from one state to any other in the union.

Dr. P. Juckiness, state veterinarian of Nebraska, stated that he had established a uniform schedule price for tuberculin testing of cattle in that state. For one animal the practitioner may charge \$5.00 and for each additional animal up to ten \$1.00, then 50 cents for each animal after that.

Dr. Luckey stated that Missouri required temperature charts to accompany the certificate of health.

Dr. O. O. Wolf, of Ottawa, Kansas, advocated a uniform certificate to practice. Said certificate to be interchangeable from one state to another. Dr. Luckey, secretary of the State Examining Board of Missouri, stated that they would enter into an agreement with other states to forward examining papers to any other state when one of her practitioners moved to another state to practice, thus saving the practitioner the time and expense of taking another examination in the later state.

Following this discussion, Dr. D. O. Knisely, of Topeka, Kansas, presented a paper entitled "Acute Indigestion in the Horse." The discussion was participated in by Drs. Lyman, Liegerot, and others.

Dr. B. F. Tumbleson, of Ulysses, Nebraska, presented an interesting paper on the subject of "Shots at Random."

Dr. O. E. Troy, of Rayton, N. Mex., presented a paper on the "Application of the Tuberculin Test" in that state. It was moved, seconded, and carried that discussion of this paper be deferred till that part of the second day's program which was to be devoted to tuberculin testing and autopsy.

Dr. T. W. Gidley, of Malvern, Ia., gave an interesting case report. The case report of Dr. B. J. Baker, of Mitchel, Nebraska, was read by title and given to the publishing committee. Dr. F. M. Starr, of Odessa, Mo., gave an interesting case report of an animal died of Intestinal Calculus. Dr. C. F. Pinkham, of Solomon, Kansas, gave a case report.

Meeting adjourned at 5.30 P. M.

A reception was held in the parlors of the Coates House at 6 o'clock P. M. The banquet was served at the same place at 7.30 P. M.

After the banquet was served, preparations were made for a stereopticon demonstration.

The first talk was by Dr. Frank Hall, City Food Inspector, of Kansas City. His subject was "Food Inspection from an Inspector's Viewpoint." A vote of thanks was extended to the doctor for the excellent manner in which he presented his subject.

The fact was clearly elucidated that much money is spent by cities for things less important than for the protection of the food supply. The preservation of the health of a nation is of the first importance to that nation, city or community. He advocated first the preservation of the public health giving practical illustrations; much money is spent in the police force to protect the people from petty larceny, but scarcely any money to protect the people from impure and contaminated foods, thus looking to the preservation of the public health. This is pretty universally the case all over the United States. He stated as his opinion that the most common diseases of a contagious nature was communicated through contaminated or diseased meat, milk and other foods (including the water supply).

This talk was followed by one from Dr. E. P. Niles on "Parasites a Cause of the Condemnation of Meat and Meat Food Products." This talk was illustrated by lantern slides.

Dr. R. F. Eagle gave a talk on the sanitary phase of the premises where food products are prepared at the packing houses and of the complete and excellent sanitary inspection carried on by the United States Bureau of Animal Industry. This talk was illustrated by lantern slides.

Vocal music was furnished by the student quartette of the Kansas City Veterinary College.

The meeting on Thursday, February 3, was held in the clinic amphitheatre of the Kansas City Veterinary College. The meeting was called to order at 9 o'clock by the president, Dr. A. T. Kinsley.

The first subject taken up on the clinic program was a demonstration of the technique of tuberculin testing of cattle. Five animals (cows) were used. This phase of the work was in charge of Dr. D. F. Luckey, state veterinarian of Missouri; Dr. Paul Juckiness, state veterinarian of Nebraska, and Dr. Chas. G. Lamb, state veterinarian of Colorado. The cattle had been previously prepared by having the temperature record before and after the tuberculin injection. These temperatures were printed upon large strips of canvas so that the thermic line could be followed, thus showing the temperature of each animal every two hours.

The first talk was by Dr. Luckey, in which he gave a review of the reacting cases. He called attention to the danger of leaving tuberculous cows in the herd as perhaps 5 per cent. of tuberculous animals do not react; also the danger of error of perhaps

5 per cent. of animals reacting in which tuberculosis, if it is present, might not be visible to the eye upon macroscopic examination.

Dr. Paul Juckiness also discussed the temperature charts. Dr. Luckey then conducted an autopsy upon one of the reacting animals. The temperature of this cow after the tuberculin injection ran as high as 105°. The doctor demonstrated his method of conducting autopsy. The first step after skinning the animal is to lay the carcass on the left side. This position is of advantage, because of the fact that the rumen will then be located on the under side. The cartilages of the ribs are then cut at the costochondral articulation, then by cutting the ribs about four inches from the vertebra the entire thoracic wall may be easily removed after cutting the diaphragm. The doctor makes a practice of laying the ribs, after their removal, in such a way as to act as a receptacle for the lesions found.

The superficial lymph glands, including the precrural, pre-scapular and post mammary, were normal. The post pharyngeal lymph gland was as large as a man's fist. This contained tubercular material.

The mediastinal, portal and mesenteric lymph glands were normal. The liver and spleen were also normal. There were a few tubercular nodules in the right lung.

Dr. L. D. Brown, of Hamilton, Mo., added to the discussion. He advocated giving double doses of tuberculin to cattle that had recently been tuberculin tested, at least if the succeeding test be given in from two weeks to three months. He also stated that reactors fall off in the yield of milk, while those that do not react are undisturbed in their yield during the tuberculin testing. Dr. Juckiness stated that he considered the eye test reliable. He also stated that cases which react, and upon macroscopic examination no lesions are found, the tubercle bacilli can be demonstrated by standing in the laboratory.

Dr. Luckey stated that he found a camel hair brush the best for use in applying the tuberculin to the eye.

Dr. Griffith, of Cedar Rapids, Ia., stated that 13 per cent. of the dairy cows were found affected with tuberculosis when dairy inspection was established. Dr. A. T. Peters, of Illinois, reports that the eye test has been very satisfactory, especially when heavy tuberculed.

At 12 o'clock a lunch was served in the microscopic laboratory.

At 1 P. M. the meeting was again convened. The first part of the afternoon program consisted in a demonstration of the technique of mallein testing with a general discussion and demonstration by autopsy of two of the reacting animals. This work was to be in charge of Dr. P. O. Koto, state veterinarian, of Iowa; Dr. J. M. Wright, state veterinarian of Illinois, and Dr. F. S. Schoenleber, state veterinarian of Kansas. In the absence of Drs. Schoenleber and Wright, Dr. P. Juckiness conducted the autopsies.

Dr. Jeffris, army veterinarian, Ft. Riley, Kansas, discussed his experience with glanders in Cuba and the Philippines.

The first horse, a reactor, was destroyed by receiving 5 grains strychnine sulphate intravenously.

This horse not only reacted, but also showed clinical symptoms. Two degrees rise in temperature was noted, as well as a stiffness in gait and large and very sensitive swelling at the point of injection of the mallein. The left hind leg was considerably swollen below the hock and showed several well developed farcy buds. The lungs showed many glanders nodules.

Dr. A. Plummer, army veterinarian, of Ft. Riley, Kansas, discussed the subject of glanders and malleination.

Dr. A. Trickett, Kansas City, Mo., gave a talk on the history of three of the five glanders cases.

Dr. P. O. Koto gave a discussion of the subject of glanders. He stated that without clinical symptoms in reacting cases, visible lesions will manifest themselves after a long time, making it imperative from a health standpoint to keep them in quarantine, in case they are not destroyed. It is reported that lesions appear as late as eighteen months after reacting.

Dr. C. J. Sihler, of Kansas City, Kans., stated that he believed that mallein had a certain amount of curative properties.

Dr. D. F. Luckey stated that he had no faith in mallein and that he had quit using it as a diagnostic method.

Dr. C. E. Stewart, of Charlton, Ia., discussed to some extent his experience with glanders.

Dr. C. H. Jewell, army veterinarian, of Ft. Riley, Kansas, reported his experience with mallein in the United States and in the Philippines. He questioned its value without clinical symptoms. He reports autopsy on one reacting case in which the only lesions of any kind found was alveolar periostitis.

Dr. H. E. Talbot, of Des Moines, Ia., stated that in his experience mallein has been very discouraging to him.

Dr. D. O. Knisely, of Topeka, Kans., and Dr. K. W. Stouder, of Manhattan, Kans., contributed to the discussion.

A second reacting horse was also autopsied by Dr. Juckiness. He demonstrated glands in the submaxillary and mediastinal lymph glands and also in the lungs.

The time up to 4 o'clock P. M. was taken by these demonstrations.

This left altogether too short a time for the demonstration of the immunization of hogs against hog cholera. The fact is everything was pushed along with precision and rapidity.

In this demonstration Dr. J. W. Connaway, Experiment Station Veterinarian of Missouri, gave a valuable demonstration of the immunization of hogs against hog cholera. Some of the valuable hints given were:

Potent serum is not easily made. It is necessary that germs of septicæmia do not find their way into the serum. A large hog will yield up to 3,000 c. c. of hyperimmunized serum. The posterior part of the hog is shaven, scrubbed with an antiseptic solution, then with a sharp chisel the end of the tail is cut off, from which source the blood is obtained. A sterile fruit jar can be used to catch the blood in. The top is covered with a sterile cheese cloth, a perforation is made in the center. The pig's tail is thrust through this hole, lessening the danger of contamination. After the jar is full a rubber band is placed around the end of the pig's tail to arrest hemorrhage, then the jar is taken to the laboratory. The contents is kept sterile, later the serum is pipetted off with a sterile pipette and preserved in sterile receptacles with 5 per cent. carbolic acid. Twenty c. c. of this serum is given to the pig for each 100 pound weight. To produce hyperimmune serum the hog is given 1 to 2 c. c. virulent blood with 20 c. c. of immune serum. Hogs injected with immune serum in herds where they were dying has resulted in a saving of an average of 90 per cent.

The doctor makes a practice of injecting the fluid into the muscle of the ham (from the inner side), except in sows heavy with pigs, in which case he makes the injection under the skin in the region just back of the ear. For hyperimmunizing a hog several inoculations are necessary. These inoculations are made about ten days apart. The practical demonstration on the live hog was very instructive and appreciated by all.

The first idea of hyperimmunizing against hog cholera in this country was copied from the process of hyperimmunizing cattle against cattle plague in South Africa.

The state of Illinois has appropriated quite a sum of money for the production of serum and the eradication of hog cholera, and has employed the services of Dr. A. T. Peters, formerly of Nebraska.

Missouri has appropriated considerable money, which allows Dr. Connaway to carry on the work in a limited way.

In the discussion the fact was brought out that passive immunity lasts about six weeks, but in Dr. Connaway's method where the hogs are on infected premises, the germs that the hogs pick up results in further immunity.

This meeting was by far the greatest in point of attendance and quality of program of any ever held by this association.

B. F. KAUPP, Secretary.

SPECIAL MEETING OF THE MICHIGAN S. V. M. A.

This association met in extra session at Saginaw, Mich., January 25, 1910, pursuant to a resolution passed at last regular session. President Muir called the meeting to order and called upon Dr. Stewart, Mayor, who in a happy manner welcomed the association to their city. Dr. Joseph Hawkins, of Detroit, responded in a like spirit and thanked the mayor for his hearty welcome.

Roll-call showed forty-six members present, besides three honorary members and nine visitors.

President Muir in his address said:

"At our last annual meeting you honored me with the office of chief executive, a distinction I did not solicit, and in accepting the office of president of this splendid organization I recognized a duty that each and every member owes his association, and it has been my aim to accomplish deeds that will be productive of much good to our association.

"Our membership is growing, as the report of your secretary will show, but on the question of dues I would recommend that they be increased so that we can have sufficient funds with which to produce even better returns to our members than we have in the past. We are not organized for profit, but there comes times when we have occasion to disburse money in the interest of our organization, and with the annual dues fixed at, say, \$2

for each member, we can financially combat any foe that may present itself.

"You are all aware that our time is limited, and I would suggest that our members appear promptly at our session, and aid in expeditiously disposing of the business to be brought before this meeting.

"I sincerely trust that our work here will help to better conditions for our association and each individual member, and upon this occasion I wish to extend my appreciation to our worthy secretary for his able assistance to your president this past year."

The proceedings of the last annual meeting were read and, there being no corrections to be made, they were approved by the president.

After the reading and approval of the record, fourteen gentlemen were elected to membership.

Professor Marshall's time being limited, the report of the Committee on Diseases was taken up at this time.

The professor spoke of the proposed veterinary course at the M. A. C.; it was desirous of meeting a committee from the M. S. V. M. A. in the near future.

Speaking of hog cholera, he said that diagnosis was the most difficult, and that as diagnosed in books and reports, it is not always typical hog cholera and warned against such, as they are not correct. Swine plague, so-called, is probably hog cholera, and is a representation of what is likely to be found. There is not a constant symptom, but at the same time all may be found. No person can positively diagnose hog cholera; even when produced you cannot do so. It is possible, I believe, to clean up hog cholera by serum treatment alone. Have the farmer order the serum, and then charge him for using it, but under no circumstances advise him to use it; let him decide that point for himself.

The serum is pretty nearly as perfect as any biological product.

Of tuberculosis, the situation at present is that 3 per cent. of all the cattle are tuberculous. Out of two million or two million and a half in Michigan sixty thousand are tuberculous. Pure-bred cattle are much more affected. It is as prevalent in Michigan as other states. Professor Marshall went into control work and said that Minnesota had the best methods; said that it would take one to two thousand veterinarians over one year to test all the cattle in Michigan. The professor's report was a comprehensive history of tuberculosis in this state, and he closed his

talk by urging a closer relationship between the stock-owner, farmer and veterinarian.

It was moved that a vote of thanks be tendered Professor Marshall for his able and instructive report, which was carried by a rising vote.

Dr. Giltner not being present, the Committee on Diseases report was deferred until later and the report of secretary and treasurer was submitted and referred to Committee on Finance.

Dr. Waldron, reporting for Committee on Legislation, gave a history of the efforts that were made to amend our veterinary law at the session of the recent legislature.

Dr. F. M. Blatchford, speaking for Committee on Finance, stated that the secretary's and treasurer's accounts were found to be correct and balance on hand as stated.

Dr. Krey, reporting for the Committee on Intelligence and Education, said that on a recent visit to the O. V. C. he had found things progressing favorably under the new conditions existing. He asked if the association could not take some official action toward suppressing correspondence veterinary institutions, one of which is apparently thriving under our noses, referring to a veterinary correspondence dental course in Detroit. This important subject received no further action because of limited time.

Election of new members now being in order, it was moved and supported that the rules be suspended and that the secretary cast the ballot for their election. Carried. The secretary cast the ballot as directed, and President Muir declared the applicants elected to membership.

SAGINAW, January 26, 1910.

Meeting called to order at 10.15 a. m., President Muir in the chair. Secretary announced that a photographer was waiting in front of the auditorium to take a picture of our members in a body. The association therefore adjourned for ten minutes for that purpose.

Upon reconvening, election of officers was taken up and resulted as follows:

President—Dr. J. W. Brodie, Pontiac.

First Vice-President—Dr. W. L. Brenton, Detroit.

Second Vice-President—W. J. Rook, Holland.

Third Vice-President—R. F. Erwin, Alma.

Secretary-Treasurer—Judson Black, Richmond.

Directors—1st. J. J. Roy, Detroit. 2d. S. S. De Wolfe, Hart.
3d. J. Russell, Elsie. 4th. A. McKercher, Lansing. 5th. Chas.
Stirling, Clare. 6th. H. E. Rea, West Branch.

Upon conclusion of election, Dr. C. C. Stevens gave a very interesting address upon some extraordinary parasites found in sheep and horses in his practice.*

Dr. G. W. Dunphy gave an excellent and timely paper upon the subject of "Organization; Its Advantages and Possibilities."

This subject coming up at this time when we are practically in need of uniting our forces to accomplish some legislation along live stock sanitary lines, was very opportune. It was very unfortunate that the subject did not receive consideration at this meeting. Dr. Morris, State Veterinary Surgeon, discussed this paper.

Dr. T. F. Krey, of P. D. & Co., presented a very able and interesting paper upon the prolific subject, "Biological Therapeutics in Veterinary Medicine." Papers of this kind are the ones that, when missed by being absent from meetings, are a decided loss, as progressive veterinarians should not be deprived of listening to and discussing these recent additions to our therapeutics.

Dr. Ward Giltner, M. A. C., at this time concluded a report of the Committee on Disease. He said that it had been concluded that the mysterious disease reported by Dr. Deadman, in Soo District last year, was swamp fever. Not much glanders, but tuberculosis, we have always with us. As to contagious abortion, Dr. Giltner said that if he was to report on it every year for the next ten years, there would be still something new. Concluded by reading an abstract of the Committee of the British Board of Agriculture and Fisheries on "Epizootic Abortion."

Dr. L. M. Hurt gave an excellent paper on "Internal Administration of Carbolic Acid." This was another good subject, handled in a pleasing manner. He went very thoroughly into a description of a number of cases he had observed during the past year.

Dr. Thos. Farmer gave a good paper on "Diseases of Young Animals," which elicited a good discussion by G. R. Switzer, G. W. Dumphy and others.

* Appears under Reports of Cases in this issue.

Dr. T. G. Duff, representative of the A. V. M. A. at Chicago meeting, gave a very good report of his observations while in attendance at this meeting. This report was read by Dr. Jopling, secretary pro tem.

Dr. W. S. Hamilton, an active and valued member, having been taken by death since our last meeting, a committee was appointed to draft suitable resolutions of respect in condolence. Drs. Brodie, Sutherland and Cumming were appointed as such committee.

Dr. Wm. Jopling gave an interesting account of a persistent case of apparent impaction, and exhibited an intestinal calculus that was found upon post mortem. This concretion was ovoid in shape, very irregular, rough surface, and about 4 by 5 inches. It was found at the lower end of the floating colon.

Dr. C. C. Mix gave a very interesting talk on the attitude the association should assume, and how far they should go, in the prosecuting of unlicensed practitioners, and advocated that a committee be appointed by the association and provided with stationery, and that they write to such persons, send them a copy of the law, and advise them to discontinue violating the law or suffer the consequences.

Dr. Mix moved that such a committee be appointed, and that the secretary provide them with stationery and pay necessary postage. Supported by Dr. Hawkins, who said that such a committee, in his opinion, was a good idea. The motion was carried.

Dr. Krey said that in New Jersey some such procedure was adopted, and certainly made the "quacks" scarce.

Dr. Waldron said that evidently the non-registered and ineligible from the other states were looking for a harbor of refuge from the applications that came to the Board for copies of Michigan veterinary law.

A motion was carried that we hold our next annual meeting at the Agricultural College at Lansing.

The Committee on Resolutions submitted the following:

"Whereas, It has pleased Almighty God to remove from our midst during the past year one of our most faithful and valued members, Dr. S. W. Hamilton, of Chelsea, therefore be it

"Resolved, That in his death the M. S. V. M. A. recognize the loss of one of its distinguished members who always upheld the dignity of the profession zealously, and whose genial nature endeared him to all who had the pleasure of his acquaintance.

" Be It Further Resolved, That we as an association extend to the bereaved widow and family our most sincere sympathy, and that a copy of these resolutions be spread upon the records of the association and a copy be sent to the bereaved family.

(Signed) D. G. SUTHERLAND,
J. W. BRODIE,
D. CUMMING."

Resolution adopted.

Retiring President Muir called President-elect Brodie to the rostrum and handed him the gavel. Dr. Brodie thanked the association for the honor they had conferred upon him and hoped that under his administration the present prosperity of the association would continue.

JUDSON BLACK, Secretary.

MICHIGAN STATE VETERINARY MEDICAL ASSOCIATION.

The twenty-eighth annual meeting of the Michigan State Veterinary Medical Association was called to order by the secretary in the absence of President Muir and also all the vice-presidents, in the lecture room, Bacteriological Building, Agricultural College, Lansing, February 8, 1910, at 3 o'clock P. M. Roll-call showed the following members present: Drs. Dumphy, Brenton, Ward, McKercher, Giltner, Hawkins, Marshall, Gohn, Moody and Black.

There being the quorum present, as required by the by-laws, business was proceeded with, all the above members being present at Saginaw except Gohn.

It was moved and supported that the reading of the records of the Saginaw meeting on January 25-26 be dispensed with at this time. Carried.

Moved and supported that the election of the new members elected at the Saginaw meeting be confirmed. Carried.

Moved and supported that the secretary be instructed to issue certificates of membership to Drs. Thos. Packwood, of Brown City, and Dr. Wm. I. Franciose, of Kalamazoo, upon receipt of satisfactory evidence of their resignation by the State Board. Carried.

Moved and supported that the election of officers elected at Saginaw meeting be ratified. Carried.

Dr. T. F. Krey was appointed as representative from this association to the next meeting of the A. V. M. A.

Moved and supported we adjourn. Carried.

JUDSON BLACK, Secretary.

THE ONTARIO VETERINARY ASSOCIATION.

The annual meeting was held in the Ontario Veterinary College, Toronto, on Friday, December 24, 1909.

Dr. F. G. Hutton, the president, opened the meeting with a few introductory remarks.

The minutes of the previous meeting, and reports of the committees during the year were read and confirmed.

The secretary reported a large amount of correspondence, many letters relating to better legal protection for our profession. Also he gave Colonel Robertson's report on being unsuccessful with our bill before the Agricultural Committee, and that rather than have it thrown out, or put through in an unsatisfactory manner, it was withdrawn from the committee, on the understanding that it would be brought up again at the coming session. He also reported the prosecution of a man named Jaques, of Dundas, Ont., for illegally advertising as a veterinary surgeon. He was doing so under a so-called diploma from the "London Veterinary Correspondence School." His illegal advertising was promptly stopped.

The following new members were proposed and accepted: J. G. McPherson, Toronto; J. M. Ramsay, Mongolia; W. R. Carr, Blythe; T. Scrivener, Edgeley; A. A. Carrie, Creemore; W. Harrison, Ingersol; O. Reist, Kossuth.

Dr. C. E. S. Baird gave a useful address on meat inspection. He had visited a large number of packing houses, and gave statistics of the losses. He reported several cases of hogs condemned in the neighborhood of Woodstock.

Dr. J. G. Rutherford, Veterinary Director-General, spoke on meat inspection, and strongly advocated general public meat inspection. He also gave a full and detailed statement of the efficient manner that the department under his control has carried out his instructions.

Dr. Grange, principal of the Ontario Veterinary College, strongly supported the view of both meat and dairy inspection, and received much applause from the meeting for his address on this subject.

At one o'clock the meeting adjourned for luncheon.

On the opening of the meeting after luncheon Dr. C. Elliott brought forward the matter of the proposed new Veterinary Act.

Dr. Mole brought forward a report of the Toronto Veterinary Medical Association; it was handed in and submitted to the meeting, received and filed. It contained very full information and the proposed new Veterinary Act.

Dr. Cowan spoke on the new Act and recommended it being brought forward as a government measure.

Different committees were formed to push onward the new legislation, and to "lobby" in the Ontario Legislature in the interest of the new Act.

By request, Dr. W. J. R. Fowler gave a short and practical account of the actions and doses of Aloin, calomel, nux vomica and barium chloride.

The subject was brought forward as to the date of the annual meeting of the Ontario Veterinary Association. On this matter there was considerable discussion. It was ultimately decided that our annual meeting shall be in the first week in August of each and every year.

The election of officers for the ensuing year then took place, with the following result:

President—C. E. S. Brind, V.S.

First Vice-President—W. Mole, V.S.

Second Vice-President—H. E. Hurd, V.S.

Secretary-Treasurer—C. Heath Sweetapple, V.S.

Assistant Secretary—W. J. R. Fowler, V.S.

Directors—E. A. A. Grange, V.S.; C. S. Macdonald, V.S.; S. Coulton, V.S.; C. Elliott, V.S.; W. Steele, V.S.; T. H. Lloyd, V.S.; T. E. Watson, V.S.; T. Babe, V.S.

Auditors—J. H. Reed, V.S.; C. Elliott, V.S.

Representative to the Canadian National Exhibition, Toronto—Andrew Smith, F.R.C.V.S.

Representatives to the Western Fair, London—J. D. O'Neil, V.S.; W. J. Wilson, V.S.

Delegate to the American Veterinary Medical Association—
E. A. A. Grange, V.S., Principal, Ontario Veterinary College.

C. H. SWEETAPPLE, Secretary.

MANITOBA VETERINARY ASSOCIATION.

The annual meeting of the Manitoba Veterinary Association was held in the offices of the Dominion Department of Agriculture, Portage avenue, Winnipeg, on Thursday, February 17, 1910. The meeting opened with the business session at 9.30 A. M. The president, Dr. J. Welch, of Roland, occupied the chair, and the following members were present: Drs. W. E. Martin, C. D. McGilvray, W. Hilton, W. A. Dunbar, M. B. Rombough, J. D. McGilvray, A. E. Williamson, C. Little, S. Martin, J. B. Still, H. Pomfret, H. D. Smith, Hilliard and Westall, Winnipeg; Dr. J. A. Stevenson, Gretna; W. H. McKenzie Emerson; C. A. Stevenson, Reston; A. G. Husband, Belmont; L. McQueen, Selkirk; J. Irwin, Stonewall; J. A. Swanson, Manitou; J. M. Young, Rapid City; H. Bradshaw, Portage-la-Prairie; J. Mack, Neepawa; J. F. Braund, Boissevain; S. Robinson, Brandon; Dr. Hayter, Birtle; Dr. Cline, Glenboro; and the secretary-treasurer, Dr. F. Torrance, Winnipeg.

The secretary read the minutes of the last annual meeting, which, on the motion of Dr. C. D. McGilvray, seconded by Dr. J. Irwin, were adopted as read.

The auditors' report for the past year was also adopted on the motion of Dr. Rombough, seconded by Dr. Cline.

The secretary-treasurer and registrar then submitted his report and financial statement, the latter showing a very satisfactory state of affairs, the balance on hand being \$405.82, and on the motion of Dr. J. A. Stevenson seconded by Dr. Dunbar, the report was unanimously adopted.

The election of officers then took place, resulting as follows:

Council—Dr. F. Torrance, Winnipeg; Dr. C. D. McGilvray, Winnipeg; Dr. J. A. Stevenson, Gretna; Dr. W. E. Martin, Winnipeg; Dr. W. A. Dunbar, Winnipeg; Dr. H. Bradshaw, Portage-la-Prairie; and Dr. S. Coxe, Brandon.

The council then elected the following officers:

President—Dr. W. A. Dunbar, Winnipeg.

Vice-President—Dr. H. Bradshaw, Portage-la-Prairie.

Secretary-Treasurer and Registrar—Dr. F. Torrance, Winnipeg.

Examiners—Drs. F. Torrance, C. D. McGilvray and W. E. Martin, Winnipeg.

The secretary read a communication from the American Veterinary Medical Association, being an invitation from that association to send a delegate from the Manitoba Veterinary Association to attend their annual meeting, to be held in San Francisco, September 6 to 9, 1910, and after some discussion, it was decided to appoint a delegate to attend that meeting, and that the appointment be left with the council.

AFTERNOON SESSION.

A good attendance was in evidence when the new president, Dr. Dunbar, called the meeting to order.

The meeting was opened with a very able address from Dr. Gordon Bell, Provincial Bacteriologist, upon "Laboratory Methods of Diagnosing Rabies," who illustrated his address with prepared slides, demonstrating Negri bodies.

"Some Obscure Febrile Diseases of Horses" was the title of an excellent paper read by Dr. C. D. McGilvray.

Dr. O'Brien (M.D.), Dominion City, followed with an address on "Human Febrile Affections Occurring on Farms Coincident with Fever Among the Horses."

A paper sent in to the meeting by Dr. W. Little, of Boissevain, on "Septic Arthritis of Foals" was read by Dr. Torrance, and was productive of an interesting discussion.

Dr. R. H. Cook, of the Federal Meat Inspection Division, then read a very able paper on "Contagious Abortion," treating the subject in a very comprehensive manner, which was well received by the meeting, provoking considerable discussion.

The annual banquet was held in the Manitoba Hall at 7 P. M., the chair being occupied by the president, Dr. W. A. Dunbar. About twenty-five members were present, and a most enjoyable evening was spent, enlivened with vocal and instrumental music.

It was decided to hold the semi-annual meeting in Winnipeg, at a date to be agreed upon by the council.

F. TORRANCE, Secretary.

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO.

At the regular annual election of officers of the B. A. I. Veterinary Inspectors' Association of Chicago, Friday evening, February 11, 1910, Dr. S. E. Bennett was unanimously chosen to succeed himself for president, with Dr. A. A. Holcombe as vice-president and Dr. A. F. Schalk secretary-treasurer for the ensuing year.

Dr. O. J. Lanigan, in behalf of the Food-Hygiene Committee, read a very interesting and instructive article on "Sterilization of Canned Goods." Dr. Lanigan treated the subject in a most exhaustive manner.

Mr. A. H. Roop, chief chemist of the Chicago division of the bureau, presented the last paper of the evening on "Rancidity and Free Fatty Acids in Fats and Oils." Mr. Roop made a very comprehensive and thorough presentation of his subject. This paper proved exceptionally interesting to bureau men. Lengthy discussion followed, in which Drs. Day, Paxson, Holcombe and Johnstone participated.

A. F. SCHALK, Secretary-Treasurer.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular meeting of this association was held in the lecture room of the New York American Veterinary College, Wednesday evening, March 2. The president, Dr. E. B. Ackerman, presided. The minutes of the previous meeting were read and approved.

After the usual routine business had been transacted, Dr. Thos. B. Rogers, of Woodbury, N. J., addressed the meeting on the subject of "Serum Therapy." Dr. Rogers has experimented extensively with this method of treatment in various infectious diseases, both as preventive and curative agents, and he related some interesting facts in connection with the treatment of strangles, purpura, anthrax, tetanus and distemper in dogs. At the conclusion of his remarks Dr. Rogers showed many lantern slides illustrating the various pathogenic bacteria.

Dr. W. J. Coates, Dean of the New York American Veterinary College, gave an illustrated lecture on "Anatomy of the Horse," showing about seventy excellent lantern slides, which were much enjoyed by all present.

Drs. Rogers and Coates were given a hearty vote of thanks for their contributions to the evening's program.

The president announced the recent sudden death of one of our members, Dr. Chas. S. Atchison, of Brooklyn. Drs. McCully, Ellis and Clayton were asked to serve as a committee to draw up suitable resolutions and forward same to Dr. Atchison's family.

The resolutions follow:

Whereas, It has pleased Almighty God to remove from our midst Dr. Chas. S. Atchison, a valued member of this association, and realizing the loss, not only to ourselves, but to the profession, therefore, be it

Resolved, That we, a committee representing the Veterinary Medical Association of New York City do deeply deplore his loss; his amiability and sincerity having endeared him to all with whom he came in contact; and be it further

Resolved, That we offer to his family our heartfelt sympathy, and that a copy of these resolutions be spread upon the minutes of this association and also one be sent to his family.

(Signed) R. W. McCULLY.

C. E. CLAYTON.

R. W. ELLIS.

W. REID BLAIR, Secretary.

MAINE VETERINARY MEDICAL ASSOCIATION.

This association held its quarterly meeting January 11, 1910, at the New Augusta House, Augusta, Maine. The following members were present: viz., Drs. F. W. Huntington, C. H. Newton, F. E. Freeman, R. E. Freeman, F. L. Russell, E. F. Russell, I. L. Salley, W. H. Lynch, W. H. Robinson, C. H. McGillicuddy, A. Joly, C. W. Watson, J. A. Ness and C. L. Blakely.

The reports of Secretary Dr. Joly and Treasurer Dr. I. L. Salley were read and duly accepted.

The secretary's report showed that the association had gained in numbers, and wonderfully so in attendance in the past year, and that members are taking hold with new interest and striving to make our association meetings helpful and instructive.

The treasurer's report showed a good balance on the right side of ledger. As this was the annual meeting and the time for election of officers, the election took place with the following results: President, Dr. A. Joly, Waterville; Vice-President, Dr. W. S. Lord, Portland; Treasurer, Dr. I. S. Lalley, Skowhegan; Secretary, Dr. C. L. Blakely, Augusta.

President Dr. Joly appointed the following committees, viz.:

Executive Committee—Drs. F. L. Russell, F. E. Freeman and W. H. Lynch.

Legislative Committee—Drs. A. Joly, A. L. Murch, C. L. Blakely, I. L. Salley and J. A. Ness.

Banquet Committee—Drs. A. Joly, I. L. Salley and C. L. Blakely.

Dr. C. L. Blakely read a paper on "Fistulous Tracts and Their Treatment," which created considerable discussion.

At 8 P. M. all adjourned to the banquet hall, where a first-class supper was thoroughly enjoyed by all. Dr. Joly as toast-master called upon each one in turn to say a few words, and a very pleasant hour was passed smoking and listening to the different orators (?). It was voted to meet on April 10, 1910, at the Bangor House, Bangor. Drs. Murch, F. L. Russell and C. H. Newton were appointed to read papers. Meeting adjourned at a late hour.

C. L. BLAKELY, Secretary.

YORK COUNTY VETERINARY MEDICAL ASSOCIATION.

This association held its annual meeting March 15, at York. There was a good attendance and an interesting meeting. All the officers were re-elected for another term, which means that Dr. H. E. Kline, York, is president; Dr. J. D. Smith, Dallas, is first vice-president; Dr. W. E. Cranmer, Hanover, is second vice-president; Dr. E. S. Bausticker, York, is secretary, and Dr. Charles Lenhart, York, is treasurer.

The June meeting will also be held in York.

E. S. BAUSTICKER, Secretary.

NEWS AND ITEMS.

TWENTY-FIFTH ANNUAL REPORT OF THE BUREAU OF ANIMAL INDUSTRY.—The twenty-fifth annual report of the Bureau of Animal Industry of the United States Department of Agriculture, just published, is an illustrated clothbound volume of 502 pages containing special articles and information of both popular and scientific interest. This report is issued as a Congressional publication, and a limited number of copies are assigned to each Senator, Representative and Delegate in Congress for distribution among his constituents. The Department has no copies for general distribution, its quota being required for its employees and such outsiders as co-operate in its work. The book is on sale to the public by the Superintendent of Documents, Government Printing Office, Washington, D. C.

Tuberculosis in its various aspects is the subject of three articles. Dr. A. D. Melvin, the Chief of the Bureau, in considering the economic importance of this disease among the food-producing animals, estimates that the financial loss from this cause is at least \$24,000,000 annually. Dr. E. C. Shroeder, superintendent of the Bureau's experiment station, points out the danger from the tuberculous cow to human health. His paper is accompanied by a number of striking illustrations showing cows of fine appearance which are really affected with tuberculosis and giving off the germs of that disease in such a way as to be dangerous to consumers of their milk. Drs. John R. Mohler and Henry J. Washburn, of the Pathological Division, have a paper dealing with the causation and character of animal tuberculosis and federal measures for its repression.

The Bureau's field experiments with serum for the prevention of hog cholera are described in a paper by Dr. W. B. Niles. Doctor Melvin in another paper presents a plan for the control of hog cholera by the systematic use of serum.

Three diseases of live stock about which little has heretofore been known, namely, infectious anemia or swamp fever of horses, mycotic lymphangitis of horses, and chronic bacterial dysentery of cattle, are described in an article by Dr. John R. Mohler. An article by Dr. R. J. Formad presents the results of an investigation as to the damage caused to the live stock industry by smelter fumes in the Deer Lodge Valley of Montana. Dr. B. H. Ransom

describes methods of preventing losses from stomach worms in sheep. The results of experiments to determine the length of time that typhoid bacilli will remain alive in milk and butter are given in an article by Dr. Henry J. Washburn.

George M. Rommel, in "Notes on the Animal Industry of Argentina," gives information about that country, which is a growing competitor with the United States for the English meat trade.

In a paper on "Improved Methods for the Production of Market Milk by Ordinary Dairies," Messrs. C. B. Lane and Karl E. Parks describe simple and inexpensive methods within the reach of the average dairyman by which clean and wholesome milk may be produced.

The outbreak of foot-and-mouth disease which appeared in November and December, 1908, among live stock in Michigan, New York, Pennsylvania, and Maryland, is described in a paper by Dr. A. D. Melvin. After a few months of vigorous work by federal and state officers, the disease was eradicated at an expense of over \$300,000 to the Department of Agriculture and about \$113,000 to the states.

The history of an importation of Maltese goats by the Department of Agriculture a few years ago, and a description of Malta fever, are presented in an article by Drs. John R. Mohler and George H. Hart. The goats, which were imported with a view to building up a milch goat industry in this country, were found to be affected by Malta fever, a disease which prevails to a considerable extent among people as well as goats on the Island of Malta and other places on the Mediterranean. After keeping the goats under strict quarantine for some time, it was finally considered necessary to destroy them all.

Other articles contained in the report are as follows: "The Need of State and Municipal Meat Inspection to Supplement Federal Inspection," by Dr. A. M. Farrington; "State Legislation Regulating the Standing of Stallions and Jacks for Public Service," by Roy A. Cave; "The Development of Live Stock Shows and Their Influence on Cattle Breeding and Feeding," by E. G. Ritzman; "The Value of the Poultry Show," by Rob R. Slocum. The volume also contains statistics of the live stock markets and meat inspection and other miscellaneous information regarding the live stock industry.

Some of the articles in the report have been issued separately in pamphlet form and can be obtained in this form on application to the Department of Agriculture.

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary.
Alumni Ass'n. N. Y.-A. V. C. ....	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.	Sept. 6, 7, 8, 9, -10	San Francisco.	R. P. Lyman, Kansas City, Mo.
Arkansas Veterinary Ass'n. ....	.....	.....	Horace E. Rice, Little Rock.
Ass'n Médécalle Veterinaire Française "Laval"	1st and 3d Thur. of each month	Lec. Room Laval Un'y, Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.	2d Fri. ea. mo.	Chicago.	A. F. Schalk, Chicago, Ill.
California State V. M. Ass'n. ....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n. ....	.....	Ottawa	A. E. James, Ottawa.
Chicago Veterinary Society.	2d Tues. ea. mo	Chicago	J. M. Parks, Chicago.
Colorado State V. M. Ass'n. ....	.....	Denver	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n. ....	.....	.....	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n. ....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A. ....	.....	.....	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A. ....	.....	.....	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n. ....	.....	.....	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.	Jan. and Aug.	Louisville.	W. A. Swain, Mt. Pulaski.
Indiana Veterinary Association. ....	.....	.....	E. M. Bronson, Indianapolis
Iowa Veterinary Ass'n. ....	.....	.....	H. C. Simpson, Denison.
Kansas State V. M. Ass'n. ....	.....	.....	B. Rogers, Manhattan.
Kentucky V. M. Ass'n. ....	.....	Not decided	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.	Monthly	Philadelphia.	S. Lockett, Glenoiden.
Louisiana State V. M. Ass'n. ....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.	April 10, 1910.	Bangor	C. L. Blakely, Augusta.
Maryland State Vet. Society. ....	.....	Baltimore.	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.	Monthly	Boston.	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.	Judson Black, Richmond.
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Mississippi State V. M. Ass'n.	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.	July 1910.	Omaha	B. F. Kaupp, Fort Collins, Colo.
Missouri Vet. Med. Ass'n.	St. Joseph.	F. F. Brown, Kansas City.
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New York S. V. M. Soc'y.	Ithaca	J. F. De Vine, Goshen.
North Carolina V. M. Ass'n.	Wilmington	Adam Fisher, Charlotte.
North Dakota V. M. Ass'n.	Jan. 1911.	Fargo	C. H. Martin, Valley City.
Ohio State V. M. Ass'n. ....	.....	.....	Sidney D. Myers, Wilmington
Ohio Soc. of Comparative Med.	Annually	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n. ....	.....	.....	R. A. Phillips, Oklahoma City
Ontario Vet. Ass'n.	1st week in Aug. each year.	.....	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.	Call of Chair.	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Philippine V. M. A. ....	.....	.....	Chas. G. Thomson, Manila.
Province of Quebec V. M. A. ....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.	Jan. and June.	Providence	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.	Wm. T. Conway, St. Louis, Mo.
Schuylkill Valley V. M. A.	June 15, 1910.	Reading	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn. ....	.....	Philadelphia.	B. T. Woodward, Wash'n, D. C.
South Dakota V. M. A.	July, 1910.	Sioux Falls.	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.	Jan. Apl. Jy. Oct.	Los Angeles.	J. A. Edmonds, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.	4th Tues. ea. mo.	407 Ill. Ave.	H. R. Collins, So. St. Joseph.
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Vet. Med. Ass'n of N. J.	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
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Washington State Col. V. M. A.	1st & 3d Fri. Eve.	Pullman.	R. G. McAlister, Pullman.
Washington State V. M. A.	Seattle.	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.	1st Wed. ea. mo.	Pittsburgh.	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad.	Grand Rapids.	J. P. West, Madison.
York Co. (Pa.) V. M. A.	E. S. Bausticker, York, Pa

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The two advertisements of ERNST BISCHOFF & Co., on pages 1 and 13 hold some excellent preparations for veterinary use. The Catalogue of this house will be found of great value, as it furnishes a list of up-to-date importations.

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AMERICAN VETERINARY REVIEW.

MAY, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, March 15, 1910.

COLIBACILLOSE OR DIARRHOEA OF YOUNG ANIMALS.—Among the microbial diseases which are most frequently met with in young domestic animals, three are principally deserving attention, viz.: Septic Pleuro-pneumonia, Polyarthrititis and Diarrhœa. This last one is the most frequent and the most serious. It was the subject of an important lecture delivered by Prof. Van Der Heyden and was resumed in the *Annales de Medecine Veterinaire* of Bruxelles. Diarrhœa is not a morbid entity by itself, but a symptom common to several affections, which are essentially different in their causes. The principal infecting agent, which has been found most commonly in diarrhœa is the virulent coli-bacillus, hence the name of coli-bacillus which is given to contagious diarrhœa. The virulent coli-bacillus does not differ morphologically from the ordinary bacillus, normal host of the intestines of animals. Perhaps it is the same which under the influence of some conditions has become virulent. It assumes the form of rods, rather thick at their round extremities and often is united by pairs. They are mobile, grow poorly in acid media, produces gases in sugar media and coagulate milk. They secrete very dangerous toxines. They also present this peculiarity of not being identically the same everywhere they are found. The one coming from one farm, for instance, differ-

ing from that of another. By its great natural diffusion, this pathogenous agent is always ready to invade the organism of newly born animals, whose umbilicus, yet uncicatrized, constitutes a door of entrance widely open to the introduction of the virus; there is in that region a group of blood vessels more or less obstructed by clots, which are excellent media for the penetration of the germs, and even at the time of parturition, when the rupture of the allantoid takes place, the bacillus can, with the greatest facility enter the urachus to reach the bladder, grow, multiply and infect the organism. Besides this, the mouth is also a way of entrance. Indeed, opening and closing at every moment, by the sucking actions of the foetus still in utero, the mouth becomes an organ of reception for these same pathogenous agents, which are then swallowed and carried into the stomach; when finding its contents still acaline, they can cultivate and travel in mass in the small intestines.

From these considerations one can see that the treatment of this affection must be principally preventive. Hygienic measures for both the mother and the new born product; aseptic ligature of the umbilical cord, antisepsy of the stump. To prevent the infection by the mouth, this can be protected with a light muzzle, kind of little basket, and to modify the acidity of the contents of the stomach drenches will be frequently given to stimulate the immediate functions of the gastric glands. The curative treatment is generally accompanied with failures. Astringents and anti-diarrheic preparations can only at best have but a very relative effect and constitute after all but a treatment of symptoms comparatively useless.

* * *

However, as the disease is of microbial origin, a powerful means of control is offered by Serotherapy. In the preparation of the serum of coli-bacillose, it is of the utmost importance to proceed with a great deal of care on account of the great toxicity of the cultures of the coli-bacillus. A very small quantity of pure killed culture shall be used first, so as to obtain an antitoxic im-

munity. After each injection, the horse reacts with a quite high thermic elevation, accompanied with general symptoms. After one or two days these have subsided, and if the condition of the animal allows it, they are repeated at intervals of 10 or 15 days. After several injections, more virulent cultures are used, in increasing doses, carefully calculated so as to promote a new formation of lysines or antitoxines. After several weeks the serum of the horse that has received the treatment is very active against the coli-bacillus that had been employed.

But the varieties of coli-bacilli are quite numerous, therefore it is necessary to immunize the horse with several different varieties, and according to Jensen at least one dozen is necessary. This is the reason why the preparation of an anti-coli-bacillose serum requires more than a year and as besides this, there is often possibilities of pyogenous infections by the injections, it is not surprising if the price of the serum is very high. However, when the serum is sufficiently polyvalent, the blood is drawn rigorously aseptically, the serum of the immunized horse is allowed to settle and is placed in vials where it can be kept for one year with all its active properties. The following are the results recorded by the author. To the curative point of view, with a serum obtained with cultures of fourteen different breeds of coli-bacilli, the facts are not yet sufficiently numerous to allow conclusions. Yet in calves, it has been successful in some and not in others. But as a preventive agent the serum has proved very active in places where before most of the calves had died with diarrhœa; in another, where the animals were also dying, two animals had not been treated preventively, and both contracted the disease. The failures may, however, be easily explained by the fact that the treatment had been applied too late, or again by the presence of other affections or bad hygiene, etc. Nevertheless, the results that have been obtained are very encouraging and deserve the attention of those who may come in contact with that disease of young animals.

OTHER METHODS OF SKIN STERILIZATION.—In previous chronicles (October, 1909, and March, 1910) the methods of disinfecting the field of operation of the skin by iodine have been treated, but the subject is of sufficient interest to deserve a few more remarks. It will be remembered that one of the methods patronized was that of Grossich, against which it was objected to because of its failing in giving the primordial desideratum of all methods of disinfection, namely, the elimination and most complete removal of all that could soil a field of operation. It is true that washing with hot water, soap and brushes gives in the majority of cases almost complete satisfaction. But still there are objections, and among them is that of interfering with the perfect penetration of the tincture of iodine, and therefore a thorough sterilization. In the *Zentralblatt für Chirurgie*, there are two modifications of the Grossich method which I am pleased to reproduce. In the first, Prof. A. Bogdan, of Hungaria, has had the idea of substituting for the washing, the rubbing of the skin with a tampon of gauze dipped in iodated benzine at 1 to 1,000. Benzine dissolves fat better even than ether, is less fluid and less volatile, consequently is superior to it in removing all epidermic remains covering an operative field. Besides this, dissolved in benzine, the iodine possesses already a marked bactericid power. Prof. Bogdan's technic is very simple. The friction with iodated-benzine is made with sterilized wadding pads or plugs, well soaked in the solution two or three times. The friction lasts two minutes. The coating over with the tincture of iodine is done immediately after. It is repeated several times so as to have the skin well soaked with it, and that the maxima of bactericid effects be obtained. In 800 operations where the method has been resorted to, only perfect results have been recorded.

The second method of sterilization of a field of operation is due to Prof. O. Von Herff, of the University of Basle. For him the ideal antiseptic of the skin is alcohol. But employed alone, it has the objection of hardening, of tanning immediately the superficial layers of the skin, and to close in the deep the patho-

genous germs which it is so essential to destroy or eliminate. Previous washing and brushing with hot water fulfil this last condition, it is true, but they require too much time, and again, soap water softening the skin, they have an action directly antagonistic to that of alcohol, and consequently they must not be used when the sterilization with alcohol is considered. Prof. von Herff instead of them uses acetone. It possesses powerful lipolytic and karyolytic properties, it takes off perfectly from the skin all the epidermic detritus and fatty substances that cover it, and having dehydrating qualities, instead of interfering with the action of alcohol, it promotes its penetration in the skin, without reducing its concentration and bactericid powers.

Equal parts of acetone and alcohol mixed together form an excellent association for immediate use. Rub for five minutes until the parts are well dry, with flannel plugs dipped in the mixture. Then careful drying with dry compresses and coating over with a protecting mixture made of benzoin, rosin of damar of each 10 grammes, other 120 per cent. of an alcoholic iodurated solution of iodine. When the operation is ended and the sutures made, compresses of the same mixture are used in the dressings. This sterilization with acetone alcohol has given best results in 280 cases of abdominal surgery.

* * *

THE MICROBE OF CONTAGIOUS PLEURO-PNEUMONIA OF CATTLE.—Since the researches of Nocard and Roux, the germ of contagious pleuro-pneumonia belongs to the group of microbes, so small in size that they pass without difficulty through a Chamberland or a Berkefeld filter, which present an obstacle to ordinary microbes and are not allowed to pass through them. For these reasons they are known as invisible or ultra-microscopic microbes on account of the impossibility to see them or at least to precise their morphology by microscopic examination. It is known that by a new process of culture, in collodion bags, Nocard and Roux did succeed in reproducing the pleuro-pneu-

monia virus. After several days of incubation in the rabbit, they observed that a slight cloudiness had developed in the culture, which certainly was of microbial nature; the contents of the bags used as witnesses having preserved their clear and limpid aspect. And yet, the examination with the microscope, with or without coloration, detected in the cloudy fluid only extremely small granulations of so minute size that their exact shape could not be made out. This culture thus obtained could itself be cultivated and reproduced in series with the same physical characters and having its specific proper virulency. Later on these experiments were renewed with Dujardin-Beaumetz, leaving the collodion bags aside, that is *in vitro*, in a liquid media, to which beef serum was added and in which the germ developed well, but always under the form of animated granulations and without well defined morphology. All these facts we have presented to our readers at the time of their publication.

The question was at this point when the learned director of the Pasteur Institute of Bruxelles, Mr. Bordet, took it up. He has obtained very remarkable results, not only to the point of view of this very microbe of contagious pleuro-pneumonia, but also to the more general consideration of the study of the various invisible microbes. He has proved before the Royal Society of Medical and Natural Sciences of Belgium that some virus classified in the group of the ultra-microscopic agents and specially that of contagious pleuro-pneumonia of cattle, were only abnormal forms of involution resulting from cultures of the microbe in nutritive media not sufficiently appropriated to them. In such cases, these organisms do multiply, it is true, and keep their specific virulency, but they also undergo deep modifications in their proper morphology. It is likewise the same for some microbes which normally have an elongated form well marked, and which affect in defectuous condition of their life the form of granulations.

Taking from a culture of bovine pleuro-pneumonia, coming from the laboratory of Dujardin-Beaumetz, in which only amorphous granulations could be seen, Mr. Bordet replanted it in a

media of defibrinated blood, which he had often tested for the cultivation of delicate microbes. In those cultures, no microbial growth could be seen, but the defibrinated blood became black all along the line of replantation. Preparations treated with Giemsa, by heat, the most powerful reactive known, showed no more simple microbial granulations like those in the previous cultures, but perfect spirochetes, very thin and rather long, with spires close together. This spirochete of pleuro-pneumonia varies very much in its length and sometimes it is very reduced. On solid media, the cultures reveal a long spirochete which is very thin. But on peptonized alkaline bouillon and fresh rabbit serum, Bordet has obtained rich cultures in which the microbes were stronger, easier to color, and therefore more readily visible. At any rate it is quite long, but sufficiently thin to pass through filters. To Belgium then belongs the honor to have established the fact that the microbe of Pleuro-pneumonia Contagiosa of Cattle is a spirochete. This new discovery and the method attached to it, opens a new and wide field to bacteriologists, and we can look for more great information relating to the morphology of other ultra-microscopic microbes.

* * *

SPASMODIC INTESTINAL OBSTRUCTION.—This is the name that is proposed in the *Rec. de Medec. Veterinaire* by Mr. L. Naudin for an affection which he says has not been described in classical works and which, characterized by long persisting colics and complete arrest of defecation, present no explanatory cause at post mortem. Four observations have presented the following clinical picture: Sudden attack in the stable or while at work, shortly or a long time after meal, violent lasting colic with short moment of quietness at intervals. In the beginning of the attack, dropping of a few balls of normal feces and afterwards dry and coated. Conjunctiva normal, pulse slightly jerking and regular, flanks tight, borborygms loud, rectal examination negative, temperature normal. Some animals refuse all food, others

eat a little. After 6-10 hours constipation, which resists all kinds of treatment. The result of all purgatives being only an increase of the intestinal borborygms. This condition lasts between five to eight days and the animal dies suddenly, either in an attack of colic or after ten or twelve hours of quiet condition which seemed to indicate recovery. The post mortems which have been made were always negative. No volvulus invaginations or hernia, no coprostasis, no calculi, contraction or intestinal strangulation. The digestive canal was always perfect in its whole length, the floating colon and the rectum being empty, the cæcum and large colon containing normal quantity of soft or liquid feces. No rupture of organs, nor enteritis or peritonitis. Only evidences of fatal auto-intoxication by the degeneration and altered condition of the liver and kidneys with the congestion of the large serous membranes and sub-cutaneous cellular tissue.

Having read the record of two cases in human practice of obstruction by spasmodic contraction, and of the autopsy of one of these cases when the spasm having disappeared, there remained nothing to explain the symptoms of obstruction exhibited by the patient, Mr. Naudin thought that the same condition may have been present in his own cases, and he suggests that the spasms, if there was any, may have been located at the origin of the floating colon. Is such condition possible of a diagnosis? Perhaps, if one thinks of it. Many of the ordinary causes of colic, their modes of manifestation will often allow one to reduce the number of the causes of the obstruction to spasms, calculus or strangulation and by a possible exclusion of the two last; that of spasmodic contraction will remain. It is important to make out the diagnosis as the treatment and the indications will differ. No more excitation of the peristaltism, but on the contrary anti-spasmodic and sedatives, opiates, chloral, etc.

It may be asked, however, if instead of a new undescribed affection, it is not rather a new addition to the long history of the etiology of colic, possibly overlooked, that Mr. Naudin refers to in his article. As after all, there are many cases of abdominal troubles which are probably due to intestinal spasms, and which

are relieved, and in where no post mortem has been required. Consequently the spasms could not be confirmed.

* * *

PARASITIC MAMMITIS.—Diseases of the udder are frequent in our large domestic animals and their manifestations are well known. Acute and chronic as well as specific inflammation are daily observed. It is not so evidently with parasitic mammitis, as the one recorded by Prof. Noussu in the *Recueil de Med. Veter.* might give an idea. If it is new, it is more than probable that closer observation will bring out others of similar nature.

A veterinarian was consulted for a cow in good milking condition in which the milk contained at times little worms. The milk was of course altered and its use might be dangerous. Yet the animal was in perfect health and did not present any evident external signs of mammitis. But at the milking the milk was yellowish, thick, grumelous and mixed with bloody striæ and thready blood clots. In fact the milk had the characters which are found in ordinary common epithelial mammitis. There was no general disturbance in any other function, no indications of progressive morbid process. Yet the worms were present. The teats being well cleaned, the milking was made in filtering it upon a piece of fine muslin, and among the clots of blood there were the parasites remaining on the filter, vermiculated, cylindrical, of pale reddish color and measuring variously between one millimeter and one centimeter in length. Swimming very actively when the milk was drawn, they seem to move as eels in the fluid that remained on the muslin. On further investigations as to the nature of the parasites, it was readily made out that they were not true worms, but only the larvæ of insects, which, examined by several entomologists, were finally classified as larvæ of *Chironomus*. The trouble of the cow was an accidental parasitism of the mammæ with infestation of external origin and not one of ordinary permanent source.

The *Chironomus* is a very small insect which lives in shady places round swamps or rivers. Their eggs hatch in time varying

between twenty-four hours and a few days, and their larvæ when reaching a proper media gradually develop until their complete transformation to adult insect. It is very evident that in this case the larvæ had penetrated the rather widely open mouth of the teats of the cow, from where possibly a drop of milk was oozing, or possibly again that the insect itself attracted by the same cause, deposited its eggs at the entrance of the teat and that when these hatched the larvæ penetrated directly in the udder. At any rate, the infestation was truly accidental and must have occurred as the animal was pasturing.

For the writer this peculiar trouble may not be such a rare exception. Many cases of mammitis considered as ordinary and benignant affections, even when they are accompanied with escape of blood clots may have similar and identical cause and likewise cases of mammitis which occur in summer, may be but temporary affection due to the development and multiplication of larvæ which take place when the external surrounding atmosphere becomes warm.

* * *

INFECTIOUS GRANULAR VAGINITIS.—In several issues of the *Archivio Scientifico* there was published a report presented before the Royal Veterinary Academy of Italy, from which are extracted a few of the most interesting facts. Also known as Contagious Vaginitis, Infectious Vaginitis, Catarrh, this disease prevails in all central Europe, and is already well known in several countries, where its study has been extensively carried out.

It begins by a slight redness of a small portion of the vulvar mucous membrane which is soon followed, say after ten or fifty hours, by the apparition of small characteristic granulations. Some points strongly red in color, appear on the inflamed mucus and are the first stage of the formation of small elevations, which are semi-spherical, semi-ovoidal or again irregular and varying in size from that of a millet seed to that of a small wheat grain. These granulations are firm and analogous to lymphatic follicles; they are dark red, in severe cases of dark wine coloration, and when of long standing they become yellowish, hyaline

and transparent. They are not suppurating. Their number varies with the severity of the disease. The vulva is more or less œdematous with slight discharge of mucus and the vulva is more or less hyperæsthesied. However, there is never abundant discharge from the vulva. There is no fever; some time urinary tenesmus is present, and now and then an animal may lose his appetite. These are the manifestations of the acute stage. They last one or two months and then the chronic stage follows; the granulations have become hyaline or transparent and resemble gelatine drops. This stage lasts from several months to several years. The disease is not easily communicated to bulls, even when this animal has served a number of diseased females. When it is transmitted there is acrobustitis and balanitis. In very severe cases sometimes orchitis.

Vaginitis by itself is not a serious affection, but it may prove disastrous for large establishments, as from 80 to 90 per cent. of the cows affected with infectious granular vaginitis do not become in heat, and after one or more years they are entirely sterile. Numerous abortions and premature deliveries are often observed, and also retention of foetal envelopes, endometritis, nymphomania, diminution and arrest of lactation and death of the newborn are among the sequelæ that may take place. The treatment is strictly local. Although many antiseptics have been advocated, Bacillol seems to give the best results when used either in injections, ointments, pessaries or other ways. Generally three or four weeks are required for the treatment.

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BIBLIOGRAPHY—OFFICIAL REPORT FROM CANADA.—DOCTOR J. G. Rutherford, V. S., H. A. R. C. V. S., the honorable ex-President of the A. V. M. Association, has favored me with a copy of his report to the Secretary of Agriculture of Canada for the year 1908-1909. Personally it has been a double pleasure to me—a flattering souvenir from the ex-President of the National Veterinary Society of America, and pleasant reading, the report being published in French. Among the matters of interest contained in the report, I notice principally the Comptes

Rendus of the Proceedings of the first meeting of the International Institute of Agriculture, which was held in Rome in 1908, and to which Dr. Rutherford attended as a delegate. The Veterinary Director General found himself in excellent company, as many of the various delegates present, coming from every part of the globe, were all more or less representing officers from their respective governments. Dr. Rutherford has the honor to be elected one of the members of the Permanent Committee.

* * *

OATS' FOES.—(*Les Ennemis de L'Avoine*), by MM. Brocq, Rousseau and Edm. Gain.

Veterinary and agricultural literature needed precise documents relating to the special alterations of the various alimentary products which are given to animals. In writing this little book the authors have made the attempt to remedy to this condition, and their effort is a serious one. They have selected oats because of its great importance in equine alimentation and also because a knowledge of its alterations is of first necessity to insure a thorough hygienic food for the animals which partake of it. Having considered oats in a somewhat general sense, by treating it not only as grain, but also as fodder they have, as foes of oats, had in view to consider not only the parasites, vegetal and animal, but also the various diseases or accidents that may affect it, and then have divided their work in two parts. In the first the foes during the vegetation, and in the second after harvest. This division, perhaps a little arbitrary, was necessary for the presentation of the subject.

In the first chapter, five orders of the fungi living upon oats are considered. In chapter second, the nematods, acarians and insects that are found as parasitic animals of oats. In the third chapter are found the diseases or various accidents. The work is illustrated by twenty-four plates which deserve high praise for their clearness and neatness. There is at the end of the book a bibliographic list which the authors have tried to make clear so as to do away with numerous queer names given to fungi of

grains which are likely to confuse the reader. In its conciseness the book of MM. Brocq, Rousseau and Edm. Gain is one which will prove most useful to all those who are interested in the production of good and sound grains and fodders for animals. The work is published by Asselin and Houzeau of Paris. Price five francs.

* * *

This same house has just brought out the fourth edition of a *Traite de Thérapeutique Vétérinaire* (Treatise of Veterinary Therapy), by Prof. Kaufmann.

When some time ago it was my great pleasure to notice the sixth edition of Prof. Winslow's, I wondered at the necessity of the rapid reproduction of a similar work on account of the constant additions that are made by the number of new drugs and of new therapeutic methods brought out and introduced in our practice. It is the same in all countries. The work of Prof. Kaufmann is a good addition to French literature on the subject. The arrangement of the work, the same as in previous editions, differs from others on the subject as in it the drugs are arranged by groups according to their action upon: First, the cause of the disease (antiseptic, antiparasitic and immunization); second, the tissues by local applications; third, on the various functions after absorption.

Immunization is the subject of a very interesting chapter in which the reader is readily made familiar with the means of defense of the organism against microbial infection, and where he has explanation of many new different expressions which have found their way of late in medical phraseology. The fourth edition of this veterinary therapy counts a number of references to new drugs and methods which have found recent admission in the arsenal of the daily practitioner.

* * *

ANIMAL PARASITES AND PARASITIC DISEASES.—Second edition; revised, by B. F. Kaupp, M. S., D. V. S., is a little work

published by Alex. Eger, of Chicago. The work is divided into four chapters. In the first the Ectozoa are treated. In the second the Entozoa, in the third the Protozoa, and in the fourth general rules for the preparation of specimens are presented. This is quite a good part, one which the beginner will no doubt find interesting, as it gives him precious directions how to mount specimens for preservation and how to stain the most ordinary protozoa. A few words on the chemistry of animal parasites completes this very concise treatise, which is illustrated by numerous plates and photomicrographs made by the author. But it is far from being ready to supplant Newman translated by Fleming. Then?

* * *

SUNDRY ITEMS.—Acknowledgment is made of the receipt of Bureau of Animal Industry Circular 68, revised, on "The Diseases of the Stomach and Bowels of Cattle," by A. J. Murray. M. R. C. V. S.

Bulletin 424 on "The Need of Controlling and Standardizing the Manufacture of Veterinary Tetanus Antitoxine," by John R. Mohler, V. M. D., and Adolph Eichhorn, D. V. S., already noticed in previous issues.

Bulletin No. 3 from the Experimental Station of Michigan Agricultural College on "Studies of Agglutination Reactions in Hog Cholera During the Process of Serum Production," by Charles E. Marshall. A. L.

* * *

LAWS GOVERNING VETERINARY PRACTICE.

For a great number of years, each year has added another state to those having laws regulating the practice of veterinary medicine, or greater strength to the laws already on the statute books, by the institution of state boards of veterinary examiners.

The REVIEW has always felt an especial interest in this manifestation of advancement in veterinary medicine, and has endeavored to keep it clearly before the profession of the country

by publishing annually for a number of years a table indicating the requirements of state laws governing the practice of veterinary medicine in each of the states throughout the United States. Obviously the value of such a table depends entirely upon its accuracy, and we owe it to our readers to exhaust every means available to bring it up to the date of publication, which, this year, will be the June issue. So we ask every secretary of a state society and executive office of a state examining board to consult a May, 1909, number of the AMERICAN VETERINARY REVIEW, turning to page 218, where he will find the latest publication of the table referred to, making any corrections that apply to his particular state, and mail same at once to the REVIEW office, so that the work of revision of the table may be begun early. It is not a heavy task to impose upon a man to ask him to take up his one particular state and note whether what appears under each heading across the page applies properly to the conditions as they exist to-day. Yet see what it means to him and every other reader of the REVIEW. It means that in return for that few minutes' work, he will assist the REVIEW editors to furnish him the correct statistics on fifty-four states. Secretaries of state societies and presidents of examining boards, may we ask that you furnish the REVIEW that data at once? Do not let *your* state be listed inaccurately.

* * *

A. V. M. A. MATTERS.

Dr. Archibald sends encouraging news in regard to headquarters and hotel accommodation. The Palace Hotel has been secured as headquarters, and the rates both there and in the other hotels mentioned are certainly reasonable, but he urges that the members engage them now, for the very good reason he has given. Secretary Lyman has straightened out the transportation problem on the plan suggested by Dr. Hoskins in the March issue of the REVIEW, and Dr. Nelson is also preparing an itinerary on the same plan, which we shall publish in our next issue.

ORIGINAL ARTICLES.

LIP-AND-LEG ULCERATION (NECROBACILLOSIS) ITS CAUSE AND TREATMENT.

By JOHN R. MOHLER, V.M.D., WASHINGTON, D. C.

INTRODUCTION.

For the past few years, especially during the winter season, the Bureau of Animal Industry has been appealed to on numerous occasions from various sections in the Northwest to investigate attacks of diseases affecting the sheep in these localities and to furnish aid in the treatment and eradication of these maladies. From the increasing number of letters received it was apparent that in some sections a serious condition of affairs existed and that it was not an idle appeal that had been made for help. Under a great variety of names a disease was described which seemed to point to a more or less common origin. In short, this was found to be the case when inspectors were sent into the infected regions, and what was described under so many different names was found to be in reality various manifestations of one and the same disease, namely, infections with the necrosis bacillus, a germ that was described early in the eighties by various European investigators and has since been found to be very widely scattered and the causative agent of many of the ailments which affect domestic animals. In this connection it may be stated that all the differing manifestations of the infection by the necrosis bacillus in the various species of animals are frequently brought together under the one general term—necrobacillosis.

* Presented at the recent convention of the National Wool Growers' Association, at Ogden, Utah, in connection with the paper by Dr. A. D. Melvin, published in the April issue of the Review; page 38.

During the work of the past year a very contagious form of sore mouth in lambs was observed, and studies as to its causation were instituted. This affection, with which every experienced sheep owner is more or less familiar, is designated by various names, such as sore mouth, sore lips, warty mouth, warty nose, *impetigo labialis*, *ecthyma stomatitis*, etc.

The disease has been observed in this country in both the East and the West as well as in various parts of Europe off and on for the past twenty years, and until quite recently little effort has been made to find the causative agent or to check its spread. European investigators are not at all in accord in attributing a cause for the malady, but that they have been working with this same sore mouth affection is not to be doubted when one reviews the literature on the subject and reads the very accurate descriptions of the lesions found. If there were any doubts from the published descriptions they would be dissipated by the photographic illustrations that accompany the articles. Strange as it may seem, most of these writers have not definitely determined the cause of the trouble, but a small number of able investigators have good reason for incriminating the *bacillus of necrosis*.

It has previously been the habit of many sheep owners to ascribe the cause to coarse grass, bristle grass, shad scale, bunch grass, clover, alfalfa, beet tops, and to weaning of the lambs, to dew on the grass, to frost, and to a host of other causes. These in all probability are highly predisposing factors, but not the actual cause.

The older veterinarians, before anything was known about the role of bacteria in the causation of disease, also held to the same opinions about the causes of disease in general, but a review of their writings shows that their opinions were only theories or guesses at the real cause. No experiments were made to prove their assertions, but, as in human medicine, many of the obscurities of disease are now being uncovered by definite, convincing, and indisputable researches.

It is a significant fact that from numerous specimens examined by the Bureau of Animal Industry last year the *necrosis*

germ has been isolated, and inoculation both of lambs and older sheep with the diseased tissues from the lambs' mouths has produced the disease. No observing man could advisedly question its contagiousness, and from this fact alone the Bureau is bound to take some cognizance of its existence.

HISTORY.

Some of the early writers seem to have been convinced that the disease termed lip-and-leg ulceration in this country was in no degree contagious, but at a later period many investigators opposed this opinion and strongly maintained that it spread from sheep to sheep by means of some contaminating germ.

Gilruth, of New Zealand, in 1900 reported on a disease which he termed acute facial eczema in sheep, manifested by an eruption on the face and ears of lambs. He considered it at that time to be due solely to errors of diet from eating rich feed like rape or clover. His assistant, Clayton, made an excellent report on this eruptive disease of the lips and face among a band of lambs. A large percentage were affected, the whole of the face in some cases being covered by a mass of scabs. In others the trouble was located around the mouth and nostrils only. The feet and legs were not affected, but the lambs fell off considerably in condition. In this outbreak Clayton could find nothing to account for it in the way of rape or clover, but nevertheless considered it to be dietetic. Subsequently, in 1906, Gilruth described the appearance of a similar disease affecting the skin of the mouth and nose of sheep in New Zealand. He called it acute dermatitis of the face, and his experiment demonstrated fairly conclusively that a micro-organism was the cause. About 100 of the sheep became affected, and only a few died, not as a direct result of the disease, but because of the interference with feeding and breathing induced by swelling of the skin of the lips and nostrils.

In 1907 Gilruth recorded the same disease under the term acute stomatitis affecting the lips and mouths of lambs, and found the cause to be the same germ that caused the disease the pre-

vious year among older sheep, although the actual lesions produced were somewhat different. The owner had used the pasture for five years, but previous to the outbreak no affection of the mouths or lips of any of the flock had been observed at any time. A short time after lambing, the shepherd observed several lambs with what he described as scabs affecting the lips. Believing the disease to be contagious, he slaughtered and buried the first ten or twelve he found affected. Fresh cases appearing with great rapidity, he notified the chief veterinarian and requested an investigation. After the lambs were subjected to the usual operations of earmarking, castration, and docking, 50 per cent developed more or less extensive ulcerative sores on the stump of the tail, while a considerable number showed similar lesions around the earmarks. Some of these tail and ear ulcerations occurred on lambs which showed no lesions of the lips and mouth. Curiously enough, in no instance were lesions found present in the region of the scrotum after cutting, a fact the more remarkable because the disease had been transferred in many cases from the lips and mouth of affected lambs to the udder and teats of their mothers.

In 1908 Gilruth again reported upon sore lips in lambs in New Zealand. Treatment of one band under investigation was very perfunctorily carried out, and four days after the lambs were docked and castrated 7 of the lambs and 1 ewe were found dead. All the dead lambs were wethers, and in each case the scrotum was tremendously swollen, ulcerated, and gangrenous. Only a small percentage of lambs were affected with sore mouths, but nearly all showed ulceration of the tail stumps, while the scrotums of over 80 per cent. of the castrated lambs were so affected as to require treatment, and the same virulent germs were found in all. Besides the lesions and deaths among the lambs there was at the same time a similar disease affecting the ewes of the same band, which occurred principally in the neighborhood of shear wounds and on the udders through contamination by the sore mouths of the lambs. It therefore seemed quite certain that the shears as well as the

docking knife became contaminated with the specific germs. Gilruth in his last report states that while at first all the cases brought to his attention were confined to lambs, he has since seen the disease among two-tooth ewes, and even older ewes. The disease was proved to be contagious by inoculating two healthy ewes.

McFadyean, in 1901, described a disease similar to lip-and-leg ulceration, which is usually met with in England as a troublesome affection of ewes and young lambs and called malignant aphtha. In the case of the lambs the disease is manifested by the formation of sores on the nose or lips, and the ewes develop similar sores on the teats and udder. The disease apparently is spread only by direct application of matter from the sores to the skin. This author states that in Scotland a disease exists among the lambs of any age, and rarely in adult sheep, known locally as orf. He states that it is not of rare occurrence, but has received little attention in veterinary literature. On the face the lesions are present on the hairy surface of the lips and around the nostrils. On the legs the sores may form anywhere between the hoof and the knee or even higher, and sometimes the sensitive structures around or between the claws are involved.

Armitage, in his English work, "The Sheep Doctor," describes a contagious ecthyma or malignant aphtha which corresponds very closely with the condition seen in the lambs in the sheep-raising sections of the Northwest. He says:

"In the lamb the disease first attacks one or both nostrils, the margins of the lips, and the front of the gums. The skin first shows an elevated portion of skin which is tender from inflammation, shortly converted into a spreading sore, and later covered by a scab which is readily removed. Similar changes are seen on the lips and gums, succeeded by a croupous covering varying considerably in size, often productive of much damage to the gums."

Berry, in 1901, reported this disease as existing in England, Scotland, and Wales, where it is known as contagious pustular dermatitis, orf, or crusta labialis, and is said to be more familiar to the shepherd than to the veterinarian. Sheep of any age seem to become infected, but it is more frequently and readily transmitted among lambs or sheep under one year old. In many outbreaks nearly all the sheep became infected, and diseased sheep brought into a band will transmit the disease to many of the healthy animals within a fortnight after mixing the flocks. The fatality of the disease is not great, although fluctuating from time to time.

W. Williams, in 1894, described under the term orf, or carbuncle of the coronet in sheep, a disease occurring more particularly in young sheep, but occasionally in old ones. It is characterized by lameness, inflammation of the coronet or the space between the claws, which later develops into angry-looking ulcers. These ulcers may attain a large size, fill up with granulations, or bleed readily. Similar ulcers or sores may appear on the face and head. It is not a fatal disease, but is troublesome, and when well established is slow to heal. Williams also used the term crusta labialis for the affection when the lesions are more marked on the face, although the eruption is seen on the coronets and pasterns as well as the lips and nostrils.

Hutyra and Marek, of Hungary, reported in 1906 the presence of pustular stomatitis in two imported bucks. Three days after they were turned in with native sheep the latter developed symptoms, and in a short time almost the entire band of 500 sheep showed eruptions and ulcers on the lips, corners of the mouth, and edge of the nostrils. The disease spread rapidly, but was in a benign form, the only two animals which died developing lesions in the lungs.

Hasenkamp, in 1908, observed numerous cases of ulcerative stomatitis in sheep of Germany which were affected with foot rot, and was able to incriminate the *Bacillus necrophorus* as the causative agent of both these conditions. In some of these sheep

be observed embolic areas of necrosis in the liver and lungs as a result of secondary infection.

Moussu, of France, and Dollar, of England, describe an ulcerative stomatitis of sheep which corresponds in all particulars to the disease as seen in western lambs in the United States, but add that they have observed a mortality of 15 per cent.

Besnoit, another French writer, in 1901 gave a good description of this same ulcerative stomatitis in lambs and goats, and referred to other authors who had previously written on the same subject. The disease was formerly attributed to dirt and carelessness, but Besnoit considers it a grave and contagious malady due to a specific virulent germ.

In the work of Cadéac, published in Paris in 1908, a very good description of ulcerative stomatitis of lambs is given, and the necrosis germ is given a prominent place in the causation of this disease. The evolution of the disease is stated to be very rapid.

Leclainche and Vallée have made an unpublished observation regarding enzootic necrosis of the lips and nose of French sheep, from which they recovered the necrosis bacillus. The process advanced until in some cases it completely destroyed the lips, making the eating of feed so difficult that some deaths occurred.

Knowles, in 1907, described very fully and accurately a disease occurring among the sheep of southeastern Montana which affected the lips and legs of the animals. He was the first writer to apply the name infectious lip-and-leg ulceration to this disease, which is quite appropriate, owing to the character and location of the lesions. Knowles found the necrosis bacillus to be the cause of the lesions, and succeeded in transferring the disease from infected to healthy sheep by a series of inoculation experiments.

Craig and Bitting, in Bulletin 94 of the Indiana Agricultural Experiment Station (1903), state that young and debilitated lambs when kept under unhygienic conditions are prone to contract the ulcerative form of sore mouth. They claim that

the disease is no doubt due to some of the virulent germs, as it seems to be communicated from one lamb to another.

Law, in 1900, has described, under the term ulcerative stomatitis in lambs, an enzootic affection which he says is manifestly contagious, but the infecting microbe had not then been demonstrated. A number of organisms other than the necrosis bacillus are cited as being formerly supposed to be the cause, but none of these in pure culture produced the disease.

Rushworth, in 1899, reports on aphtha or sore mouth as a very troublesome affection generally seen among sucking lambs, although older sheep sometimes are severely affected by it. Many supposed causes, such as feeding turnips, rape, etc., low vitality, unhealthy surroundings, and in aged sheep decayed teeth, have all been suggested as the cause, but the fact that the udder and teats of the ewe become affected from the lips of the lambs tends to prove its contagious nature, according to Rushworth. Apparently the lambs first become infected and the ewes are then inoculated by their lambs.

Joseph E. Wing, in his "Sheep Farming in America," describes the lamb disease under consideration as a contagious form of sore mouth, which also affects the teats and udders of the ewes. Often the sores along the edges of the lips become so troublesome as to cause the death of the lamb, more usually simply interfering with its thrift so much as sometimes to make it profitless. Wing has found that this disease often breaks out upon the mouths of western range lambs on their arrival at an eastern farm for feeding. He assumes that it is of germ origin, and therefore uses local applications of sheep dips with excellent results.

Walley, as far back as 1888, described an eruptive disease mostly seen in young sheep in England, which he termed malignant aphtha. He writes:

"I am in possession of the most indubitable proofs of the infective and contagious nature of the malady, and all our old ideas as to the disease having simply a

dietetic or local origin must be relegated to that limbo where so many ideas have gone during the last decade."

Sheep breeders and shepherds are quite familiar with this sore-mouth disease of lambs and are prepared to contend with it. Probably this fact has largely tended to mislead them as to the destructive character of the malady under unfavorable conditions, and has thus been the means of materially increasing their losses through the appearance of the more malignant and dangerous forms of this disease.

For instance, in Great Britain, while the sore mouth of lambs has been known and described for more than twenty years, the venereal form was first described in 1903 by Flook. He relates the presence of extensive eruptions about the mouth and nose and a discharge from the sheath in buck lambs. The affected bucks were placed with a small flock of old ewes, and in one week after nine of these ewes showed swelling of the vulva with raw, ulcerating sores on the skin and mucous lining of the lips of the vulva. The bucks showed ulcerating sores in the sheath, and one had eruptive lesions on the upper lip. During the same year McFadyean observed the same disease affecting the vulva of ewes, with the production of swelling, ulceration, and discharge. McFadyean reproduced the disease by collecting the discharge on cotton, which was placed into the sheath of a wether. On the third day a small sore covered by a brownish scab appeared on the skin near the opening of the sheath and continued to spread around the opening. A number of small ulcers formed, covered by brownish crusts. This author did not succeed in isolating any organism which he believed caused the disease, but considers the disease worthy of careful observation, and that newly purchased bucks might well be examined for this affection before being used in breeding. G. H. Williams reported on two more outbreaks of this disease in Great Britain, affecting the genitals of bucks and ewes and similar to those recorded by the two preceding writers. One ewe also showed lesions around the nostrils. In another flock of ewes

he found eruptions about the lips and nostrils only, and it was to this form of the disease that Walley gave the name contagious dermatitis.

CHARACTER AND LESIONS.

It becomes evident, after reviewing the various above-described forms of this disease of sheep in different countries, that



FIG. 1.—Lip-and-leg ulceration, showing lip lesions in ewe infected with germs obtained from warty lips of lamb.

the characteristic lesions may be found on any part of the exterior of sheep where the bacillus which causes it may gain entrance; but cuts, bruises, abrasions, and exposure to devitalizing processes being less frequent upon parts covered with wool and their contact with infection less likely, it follows that the woolly portions of the body are less subject to lesions than other

parts. In this country lesions upon the head, as lips, chin, nose, cheeks, gums, and hard palate, are the most frequent, while much less common are the ulcers on the legs and feet. Shear cuts and the tail stump of docked lambs are at times infected, while slit ears have been more frequently involved. In bucks frequently and in wethers occasionally the sheath is infected. The vulva of ewes has been found ulcerated in a relatively small percentage of cases, while the udder and teats even more rarely have developed the infection, notwithstanding that the sucking lambs showed more or less ulceration and eruptions on the mouth parts. In some cases lesions have appeared in the pharynx and lungs, occasionally in the liver and stomach, and in such instances the disease uniformly results in death.

It may be advisable to arrange these various manifestations of the disease into the following classes, with the statement that further study is required to explain the reason for necrobacillosis in sheep assuming several different forms or types under what appear to be similar environment, as well as for the disease becoming virulently infective in certain cases, while in others, under practically the same conditions, there is a tendency toward latency or even spontaneous recovery.

1. The lip-and-leg form, as the name indicates, attacks the lips or legs, or both. The lesions in some bands are confined very largely to the lips and muzzle, in other bands the lesions are largely confined to the legs, while in still other bands the seat of the lesions is about equally divided between the lips and the legs. This form of the disease is shown in figures 1 and 2.

The different conditions under which the sheep are kept and the character of the feed may account in a degree at least for this difference in the seat of the lesions, and also to some extent for the difference in the spread of the disease, especially within the band. Thus, during the winter, when snow is on the ground and the weather is so cold that the surface of the snow becomes hard and crusted, making grazing very difficult, the chances are that leg lesions would be likely to predominate, owing to the numerous scratches received upon the legs be-



FIG. 2.—Lip-and-leg ulcerations, showing leg lesions.

coming infected with the blood and bits of scab which drop from the infected sheep. On the other hand, if they were fed on a range where cactus and greasewood composed a large part of the feed, the spines of these plants would be likely to wound the lips and nose to such an extent that lip lesions would be apt to predominate. Other sheep ranging over such ground after

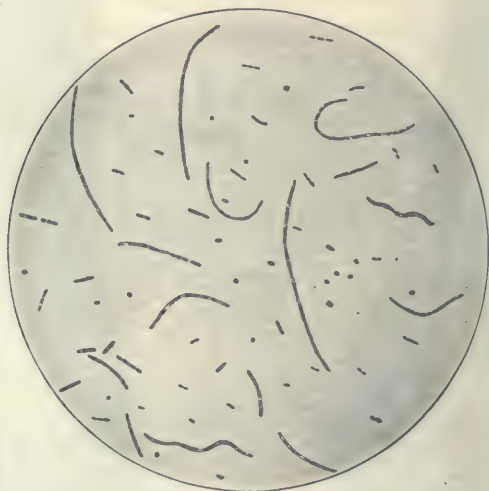


FIG. 3.—*Bacillus necrophorus* showing coccoid, bacillary, and filamentous forms.

the infected sheep had passed would under such conditions be very likely to contract the disease.

This form may assume either the active or the inactive stage. The active stage manifests itself in the various locations by inflammation, tumefaction, ulceration, and necrosis, with or without scab formation. There is more or less rapid destruction of the tissue, especially where the lesions are located on the lips or muzzle. Cases are frequently seen where more or less of the lip or the end of the nose has sloughed away as a result of the suppurative inflammation. In such lesions the predominating form of the necrosis bacillus is the long, beaded, vegetative filament located on the border of and penetrating the healthy

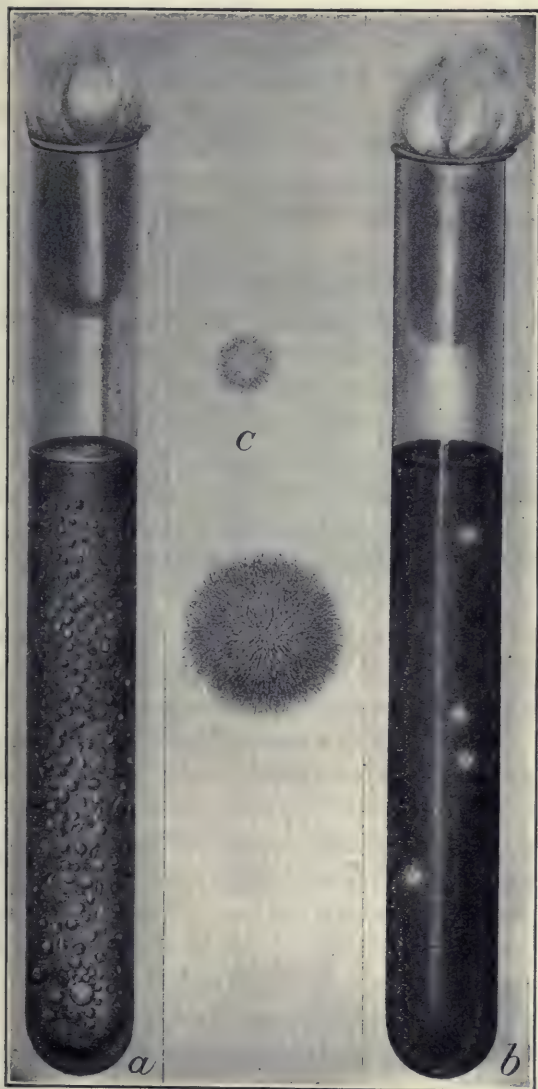


FIG. 4.—Development of colonies of *Bacillus necrophorus* in agar jelly. *a*. Culture showing twenty-four hours' growth, with numerous small gas bubbles; *b*. culture seven days old showing isolated colonies which are characteristic in that their grayish centers are surrounded by fuzzy white areas not unlike the strands of loose, fleecy cotton; *c*, single colonies of the necrosis bacillus showing this filamentous character of their growth (enlarged). (From drawing by W. S. D. Haines.)

tissue. The inactive or chronic stage is characterized by a stationary condition of the lesions, unaccompanied by tumefaction or inflammation except of a productive or proliferative character. In these cases the involution or quiescent forms of this pleomorphic bacillus, especially the bacillary and coccoid types, will be observed in the degenerated débris. The different forms of the bacillus are shown in figure 3 and its cultural characteristics in figure 4.

The lesions in the early stage usually appear as an acute inflammation of the skin on the outside of the lips. This pimple-like formation is attended with much inflammatory swelling, with a decided tendency toward the formation of pustules. They dry and form crusts of a dark grayish color. The growths extend rapidly and become in the course of a few days confluent, forming a large diffused scab, which when removed is found to cover an ulcerative surface. Simultaneously with this the lips become tumefied, swelling to two or three times their normal thickness. The appetite usually remains good, but the animals feed with difficulty, owing to the sensitiveness of the affected parts. In some cases the lesion extends from the lips over the cheeks, occasionally involving the eyelids or even the eye itself. At times a mucopurulent nasal discharge appears, which adheres to the nostrils and together with the swollen condition of the surrounding tissues causes a more or less complete occlusion of the air passages, resulting in labored breathing upon exercise. In some cases the lesions extend into the mouth, producing erosions on the inside of the lips, on the gums, and on the dental pad of the hard palate. These lesions, which are of a spongy consistence and present a warty appearance, are especially noticed on the lambs.

Lesions on the legs may coexist with those on the lips. The sheep at this time will show some lameness, especially if the ulcers appear about the coronet, in the fold of the fetlock, or in the vicinity of a joint. The progress and appearance of the ulcers upon the legs are identical with those upon the lips, and they are soon covered by a thick, dry crust which when forcibly

removed exposes a granulating surface covered with a tenacious pus.

2. The venereal form, as the name indicates, attacks the genital organs of both sexes. This form is frequently seen in connection with the lip-and-leg form, but it is also observed in some bands that do not present any other lesions.

In bucks the external part of the sheath is affected in most instances, and more infrequently the ulcerations are confined to the penis. The latter condition may be explained by the fact that a buck is liable during copulation to scratch or abrade the membrane covering the penis with burrs, etc., in the wool of the ewe, while the sheath may become infected through the use of contaminated bed grounds. In certain sections the erroneous opinion has been held that this form of disease is syphilis or clap, and has nothing to do with lip-and-leg ulceration, because it is rightly considered far worse than the latter. It is probable that this form of the disease, which is also known as ulcerated sheath and big pizzle, results in a larger death rate than all the others, and it was reported that in a number of instances quite a percentage of the band, in some cases the entire band of bucks, were destroyed as soon as the disease was discovered, because so many of the bucks were rendered useless for breeding through a portion of the penis having sloughed off. Besides, this appears to be the most difficult form to treat, yet good results from treatment were obtained in many cases.

In ewes the lesions are located on the skin or mucous membrane of the vulva, on the under side of the tail, and in the perineal region. In a few cases discharges which collected at the lower angle of the vulva and in the wool adjacent to the perineal region indicated the presence of infection in the vagina.

The sheath form of the disease is characterized by an ulcerated condition of the external part of the sheath without the penis being affected, and is not infrequent among wethers. Constant saturation of the wool around the sheath with urine probably chafes the skin, allowing the entrance of bacilli from infected bed grounds, etc. The first manifestations of this form

of the disease are the appearance of one or more very small pale yellow centres within the folds of the sheath at the juncture of the skin with the mucous membrane. Very early there forms at each of these centres an ulcer that extends outward into the skin, but rarely inward. The ulcer or ulcers extend, and frequently coalesce, so that the entire face of the sheath is covered by a single ulcer. During the early stages, in those cases where all or a considerable portion of the face of the sheath is covered with the ulcer, the entire external portion of the sheath will be more or less inflamed and tumefied.

No case of penis infection has been observed in wethers, except a few cases that had been treated by introducing strong caustics within the sheath in contact with the penis.

While this condition has been mostly observed in wethers a year or so old, two cases of natural infection were reported in wether lambs not over four months old. (See Fig. 5.)

3. The foot-rot form: Owing to the dryness of the soil or a large part of the infected section in the West, this disease probably assumes a somewhat different form from the foot rot of moist localities, though foot lesions were frequently seen in connection with the lip-and-leg forms. In several instances quite a number of sheep in the infected districts presented only foot lesions, while in other instances lesions on the feet were accompanied by ulcers on the lips. The foot lesions may first become visible either at the front or back part of the cleft, but usually the erosions make their first appearance at the heel. The inflammation rapidly penetrates beneath the horny tissue, while from the ulcerous opening there exudes a thin, purulent discharge, possessing an odor pungent and disagreeable but at the same time very characteristic. Sex or age does not appear to have any important influence on the susceptibility of the animals, as the disease manifests itself quite generally in a flock, attacking alike male and female, lambs, yearlings, and aged sheep.

4. The sore-mouth form of the disease is characterized by warty or pustular patches on the lips, covered with slightly ele-

vated brown crusts or scabs, usually seen in lambs during the fall of the year, though it has been observed earlier in the season, both in sucking lambs and in those that had just been weaned (Fig. 5).

The disease makes its appearance very quickly, the lips becoming more or less tumefied, with a slight diminution of the appetite, especially in severe cases. In some instances food is



FIG. 5.—Lamb with lesions on lips and sheath. (Photograph by Dr. W. E. Howe.)

taken with difficulty, resulting in unmistakable signs of poor nutrition and the stunting of the animal. At this stage the animal presents a greater or less number of nodules or patches on the lips, most frequently at the junction of the mucous membrane and the hairy portion. In severe cases these nodules become confluent, forming large, diffuse, fissured scabs around the margin of both lips, down on the chin, or up on the nose,

or both, in which case the whole muzzle is affected. The removal of these scabs exposes either a purplish-red, easily breeding surface, or a pitted, yellowish-white ulcer covered with pus, some of which will also be found attached to the under surface of the removed crust. In very extensive lesions there may be sufficient pus that a small quantity will exude from beneath the crust on pressure. In a few cases the disease spreads to the mucous membrane of the mouth, forming small ulcers of fungoid elevations, soft, red, and of a spongy consistence. In both corners of the mouth there are usually present small yellowish necrotic areas which are generally the last to heal. A typical, offensive odor, similar to that of Limburg cheese, is given off from the infected parts.

In some of the most extensive cases of this form there is a loss of tissue due to ulceration, resembling that seen in the lip-and-leg form. In these lesions the active, vegetative filaments will be found penetrating the healthy tissue. In unmolested cases, except probably the more extensive of this form of the disease, the crusts remain intact until the lesions are fully healed, when they drop off, leaving a clean, healthy looking surface. In such lesions the quiescent coccoïd and bacillary forms of the bacillus will predominate, while only an occasional short filament will be observed.

We have positive proof of numerous cases of the malignant type of lip-and-leg ulceration developing from the lesions in sore-mouth lambs, convincing alike to the flock master and to the inspectors who had supervision over the animals.^a

(To be concluded in June issue.)

^a The writer acknowledges his indebtedness to the veterinary inspectors of the Bureau of Animal Industry who have submitted reports on lip-and-leg ulceration, especially to Drs. John S. Buckley, George A. Johnson and Charles H. Zink.

THE CASTRATION OF CRYPTORCHIDS.*

BY W. L. WILLIAMS, NEW YORK STATE VETERINARY COLLEGE, ITHACA, N. Y.

It is generally considered advisable to castrate all male domestic animals which are to be regularly used for work or as human food. However true this may be of normal males, it is emphasized in most cases of cryptorchids or hidden testes.

It is especially desirable that the cryptorchid, or the monorchid, be castrated, in order that he may not be used for breeding purposes, because he may largely transmit the defect to his offspring. In addition to this, the abdominal testicle usually induces a perverted sexual desire, closely analogous to the nymphomania of the female.

The causes of cryptorchidism are various, and are not wholly understood. We meet with three groups of causes or conditions which are of interest:

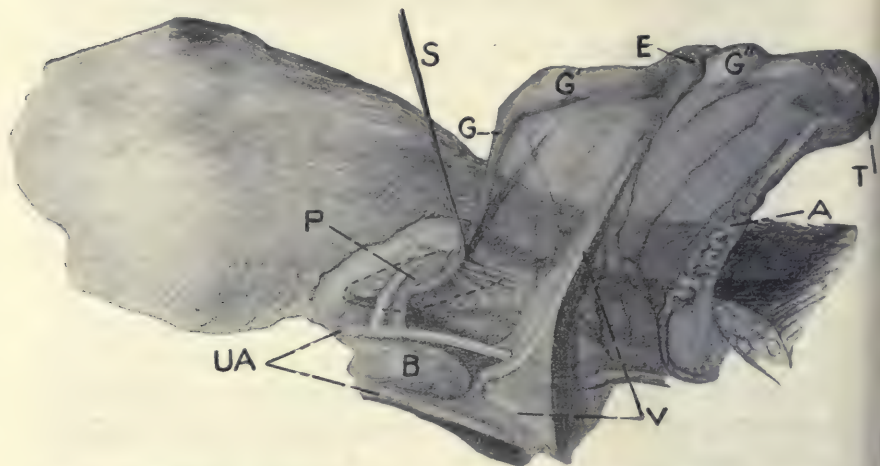
1. Arrested development, or interrupted descent of the organ.
2. Aberration of the development of the organ teratoma.
3. Pathologic condition of the testes.

In the first case, the testicle forms normally, and drops from its embryonic location into the peritoneal cavity, but fails to descend into the scrotum. It then retains its fetal character, is small, soft, flaccid and histologically shows the fetal spermatoblasts, but no spermatozoa. The gland is therefore without procreative function, but induces often a sexual mania. Its position varies, the gland being located at any point on the line passing from the embryonic seat, near the posterior end of the kidney, to and into the internal inguinal ring.

The second class, the teratoma, comprise a widely varying

* Presented at the annual meeting of the North Dakota Veterinary Association, Fargo, January 18, 1910.

group of dermoid cysts, of almost any dimensions and containing epidermal debris and structures, such as hair, dental tissues, etc. They are highly interesting, because they suggest that the sexual



FETAL TESTICLE AND ITS ATTACHMENTS ILLUSTRATING THE ATTACHMENTS AND RELATIONS OF A TYPICAL CRYPTORCHID TESTICLE, AS AFFECTING THE PROBLEM OF CASTRATION.

P. Processus vaginalis, the outlines of which are indicated by a dotted line. S. Curved sound introduced through the slit-like internal inguinal ring, into the processus vaginalis.

As described in the text, the operator may grasp this processus vaginalis between the thumb and finger tips, and feel the gubernaculum testis, G, or the second portion of this structure, G', or the tail of the epididymis, E, or the vas deferens, V, may lie within the processus vaginalis where it may be grasped without rupturing the peritoneum or inserting any portion of the hand into the abdominal cavity.

Or should the operator fail to thus grasp either of these structures, as soon as the peritoneum is ruptured through, or near by, the internal inguinal ring, and a finger is inserted, the structure, G, G', is to be recognized, fixed in the posterior angle of the ring and near by are the epididymis, E, and the vas deferens, V, just beyond which, and continuous therewith is the testicle, T.

The other structures indicated are, A, Artery of the testicle. B, Urinary bladder. UA, Umbilical arteries.

glands are really of epiblastic origin, as contended by some embryologists, instead of mesoblastic, as asserted by most authors.

The third group comprises very variable pathologic changes, such as cystic, calcareous or other forms of degeneration, malignant new growths, etc.

These three groups are very unequal in size, though definite data are wanting.

Ninety-one cases have been operated upon in our clinic, of which ninety belonged to the first group, none to the second, and one to the third.

In private practice we have met with one additional case of pathologic testicle, but no teratoma.

The teratoma are considered so mysterious that they are largely recorded, and probably an exaggerated idea of their prevalence is acquired.

It is highly important that these classes be kept in mind, since they have an essential bearing upon the surgical procedure in castration.

Other less essential elements entering into the surgical problem of cryptorchidy are whether the testicle is abdominal or inguinal in location, and to what species the animal belongs.

Cryptorchid castration, like many surgical procedures, was at first chiefly empirical in character, and in fact is still largely practiced as an empirical operation, the operation being largely taught and learned in a manner devoid of scientific knowledge.

The preparation of an animal for the cryptorchid operation does not differ materially from the general rule for other abdominal operations. We desire that the patient shall be in prime physical condition, having had abundant exercise or work to place him in good, vigorous health. Before the operation, the alimentary tract should be emptied either by restricted diet or by hypodermic catharsis. Fullness of the alimentary tract should be obviated for general surgical reasons and for the special purpose of facilitating the operation, by affording greater intra-abdominal room and preventing prolapse of abdominal viscera through the wound.

The securing of the patient, in case of the horse, needs be either in dorsal recumbency, or in the lateral position, with that side upon which the hidden testicle is located, uppermost. There is but one essential detail in securing the horse; the thigh on the side of the hidden testicle must be fully abducted. This may

be effectively accomplished by many methods of casting, and may be perfectly attained upon some types of operating table.

If the thigh is not completely abducted, the operator may find his hand so compressed that it is soon fatigued and disabled, and the operator confused and lost. It is a great error to attempt the operation except this abduction is complete and secure. Should the apparatus slip during the operation, and the operator's hand become compressed, it is liable to greatly confuse even an experienced surgeon.

The question of general anæsthesia is one upon which operators may justly differ. For the beginner, it is the best way. The beginner may, under proper aseptic precautions, manipulate an anæsthetized cryptorchid for half an hour or an hour, without serious harm to the patient, and without seriously transgressing the general sentiment of humanity for animals, which is developing so rapidly amongst our people.

It is also highly important for the experienced operator. The inguinal region needs to be kept as freely open and the tissues as passive as possible, and this can only be attained by general anæsthesia.

When the beginner is working upon an anæsthetized patient, he is relieved from the disturbances of change in position and the shifting in the relations of parts. The abdominal viscera are not forcibly pushed against his hand or through the opening. It is of great importance also that the beginner should be relieved, through the general anæsthesia of his patient, from the confusing and enervating mental anxiety caused by the pain he is otherwise inflicting upon the patient, as expressed by violent struggling, sweating, groaning, etc.

Again, general anæsthesia is always best, even for the experienced operator in all cases of complications, and the surgeon rarely knows that a case is complicated until deeply in the operation, where he cannot retreat or readily modify his plans. We believe in general anæsthesia in all cases.

Some advise rectal exploration prior to securing the patient for operation. The procedure has certain value.

In those cases of monorchidy where the scrotal testicle has been removed (a very unfortunate and inadvisable procedure), the operator may determine definitely upon which side the hidden testicle is located. It may further give him important information as to whether the retained gland falls within our first, second, or third class. Should it belong to the second or third class, the examination reveals to the operator the nature of the conditions, forewarns him of the obstacles to be overcome, and enables him to plan his operation.

On the whole, rectal exploration prior to operation is largely impracticable. It is generally inconvenient to make such examination until immediately prior to the operation, and at that time it is on the whole imprudent because of the difficulty of cleansing the hands properly after they have been soiled by the feces.

Another point of very great importance is the question of disinfection of the operative area, and the maintenance of asepsis. The problem is somewhat alike, whether the incision be made in the scrotal, inguinal, prepubian or flank region. In the horse, the incision is usually made in the scrotal or inguinal region, while in other animals it is best made in the upper flank. While the skin of the scrotal and inguinal regions is very thin, soft, and usually almost hairless, it is nevertheless thickly covered with sebum, which is very insoluble and difficult to remove. Washing for a few minutes with any ordinary antiseptic, even though preceded by soap and warm water, is of scant, if any value. The problem of the practical disinfection of this region has not been solved. The profuse application of alcoholic or ethereal solutions excoriate the delicate skin.

Careful investigations need be made toward solving this problem. Possibly a good method would be to wash the parts thoroughly an hour or two prior to the operation, with soap and hot water, perhaps mixed with kerosene in emulsion, or with lysol, bacterol, or carbolic acid. The sheath being always dirty bacteriologically, the smegma from this should be carefully cleared away, and the sheath and prepuce might be anointed with an antiseptic oil, glycerine or vaseline. The skin having been allowed

to dry completely, when the patient is secured for the operation, the operative area may be liberally covered with tincture of iodine, and allowed to dry before making the incision. After the skin incision has been made, additional security might be attained by again applying the tincture of iodine to the margins of the cutaneous wound.

Some operators make their incision through the skin and dartos in the scrotal region, parallel to the median raphe and one to two inches laterally therefrom. Others make their incision directly over the external inguinal ring and in the same direction. By the first method, the operator inserts his hand through the wound in the skin and dartos, divides the loose areolar connective tissue and pushes aside the numerous vessels, in an upward and outward direction until he reaches the external inguinal ring immediately at that point at which the second operator would make his incision.

The incision over the external ring is therefore more direct and the resulting wound less extensive, in which respect it is more conservative and preferable. The scrotal incision has the important advantage over the inguinal, in that the inevitable movements of the thigh after the operation disturb the cutaneous wound over the inguinal ring, but do not seriously involve the scrotal wound. We prefer the scrotal incision.

Having reached the loose areolar tissue in the external abdominal ring, whether indirectly through a scrotal incision or directly through an inguinal wound, the operator, with his fingers in the form of a cone, and by means of a rotary motion, pushes the areolar tissues aside and cautiously advances his hand upwards, outwards and slightly forwards toward the internal inguinal ring, or the position which it should occupy. Care should be taken to note here the presence or absence of a distinguishable gubernaculum testis, of the epididymis or of the testicle itself.

If a recognizable gubernaculum is present, it may be an important guide to the internal ring, and hence an aid of value to the operator, especially to the beginner; or the operator, by grasping this and drawing upon it, may bring the testicle out through

the ring and grasp it. Usually the presence or absence of this structure in a recognizable form may be suspected by the presence or absence of a distinct dimple or depression at the fundus of the scrotum.

When the epididymis has descended into the scrotum, it is recognized as a somewhat firm cord about the size of a man's finger, and is well nigh indistinguishable from the stump of the spermatic cord following castration. It is more free from adhesions to surrounding tissues, and its obtuse extremity is connected with the skin and dartos only by the indistinct gubernaculum. Cutting through the peritoneal sheath of the cord, the operator exposes the vas deferens and tail of the epididymis firmly attached, naturally, not by adhesions, at the distal end of the tubular cord. By exerting traction upon the tail of the epididymis, the head of that organ may be brought into view, the entire epididymis being abnormally elongated and attenuated. The testicle itself remains firmly lodged above the internal ring, or incarcerated in it, and, however much traction may be exerted on the epididymis, the gland usually remains immovably fixed.

The first case of this kind with which we met led us into error, and we removed the epididymis and a portion of the vas deferens, while we left the testicle in the abdomen. Later in our clinic we operated upon a case, the history of which could not be traced, but which had evidently been operated upon by some one who had fallen into the same error, removing the epididymis and leaving the testicle.

The condition offers some difficulty to overcome. The most direct method is to freely incise the peritoneal sheath down to the internal ring and either dilate this by forcing a finger through the ring along side of the vas deferens and epididymis, or by cautiously incising the ring with a scalpel or bistoury. The testicle may then be withdrawn and removed.

If the testicle itself is encountered in this region (inguinal cryptorchidy) the gland is to be seized and forcibly brought out through the wound. Having passed through the internal ring,

the gland is covered by the cremasteric fascia or tendon and by the parietal peritoneum, which are to be incised as soon as brought to view, and the testicle laid bare. It is to be noted that in all cases of abdominal cryptorchidy, including those we have mentioned where the epididymis has descended into the scrotum, the testicle, when brought out, is naked; while in inguinal cryptorchidy, the testicle is inevitably brought out covered by the cremasteric structures and the parietal peritoneum.

Encountering neither gubernaculum, epididymis or testicle in the inguinal region, the operator should search for and locate the internal abdominal ring, whether he designs to penetrate it or not, as it constitutes the immediate, logical guide to the location of the testicle.

The internal inguinal ring may usually be recognized in the cryptorchid horse, as an elliptical slit, appearing to the touch as about $\frac{3}{4}$ to $1\frac{1}{4}$ inches long by $\frac{1}{2}$ inch wide, directed obliquely forward and outward in its greater diameter. It is covered by a thin layer of peritoneum, while its margins, the borders of the great and small oblique muscles are distinguished by their greater thickness and firmness. This ring is located 2 to 4 inches upward, outward and slightly forward from the external abdominal ring. It is just opposite and very near to the crural ring, and, by palpating outward against the thigh, the operator easily recognizes the pulsating femoral artery as it emerges from the crural ring.

In some cases the internal ring is unrecognizable by palpation, but the determination of its approximate location is nevertheless essential to scientific cryptorchid castration. The recognition of the ring is especially difficult in animals previously operated upon unsuccessfully, and followed by the formation of a large amount of dense, cicatricial tissue. When the ring has been recognized, if the operator will approximate his thumb, index, and second fingers to constitute an incomplete circle of 1 to 2 inches in diameter and press the ends of the digits against the abdominal muscles about the margins of the ring, the peritoneal curtain closing the ring, the processus vaginalis, tends to push

outward in the form of an obtuse cone, while enclosed within it are the gubernaculum and usually the tail of the epididymis and the base of the vas deferens. The gubernaculum, in its intra-abdominal position, is recognized as a somewhat distinct, firm, straight cord, about one-eighth of an inch in diameter, somewhat movable within the peritoneum. The two latter are recognizable as hard dense, coiled cords or filaments, which are readily grasped between the thumb and fingers, and clearly recognized by palpation.

These facts we have found of the greatest importance in the clinical teaching of the operation. It is the keynote in our method of instruction. We advance the operation to this point, seize the processus vaginalis enclosing the gubernaculum, the vas deferens or the tail of the epididymis between the thumb and fingers, introduce a long pair of forceps, and seize the gubernaculum, epididymis or vas deferens, still covered by the peritoneum. We then secure the forceps in this position, with the desired structure firmly caught, and the beginner introduces his hand, palpates all the parts, ruptures the peritoneum, grasps the gubernaculum, and then the vas deferens, followed by the epididymis, and completes the operation.

Reaching and recognizing the internal ring, operators divide themselves into two or more groups in their further procedure.

We recommend in those cases we have just mentioned, in which the operator can grasp the vas deferens or epididymis outside the ring in the processus vaginalis, still covered by the peritoneum, that the peritoneal covering be ruptured by dragging upon it the tail of the epididymis grasped and drawn out, and the testicle itself brought out by traction upon the epididymis, thus completing the operation without the insertion of the hand or even of a finger into the abdominal cavity. In some cases the testicle may not be drawn through the narrow ring by traction alone, in which instances we insert an index finger, dilate the ring, and, exerting traction on the epididymis with the other hand, guide the gland through the ring with the introduced finger.

Should we be unable to grasp the epididymis outside the ring, we penetrate the ring with an index finger, and, directing it backward, hook the index finger over the gubernaculum as it leaves the posterior margin of the ring, to immediately lose itself in the tail of the epididymis. This is grasped, drawn through the ring, and the operation then proceeds as before.

Should the operator fail to locate the ring, he needs at least to determine its approximate location, penetrate the muscular wall as near to the normal position of the ring as he can determine with his index finger, and, palpating the surface of the peritoneum, locate and grasp the gubernaculum, and eventually the vas deferens or epididymis.

Theoretically, should the operator fail to locate the testicle by this plan, he should next introduce the entire hand into the peritoneal cavity, again search for the gubernaculum, the epididymis, and especially for the gland itself, and as a final resort search for the vas deferens above the urethra and trace it back to the gland.

Practically, when an operator must insert his entire hand into the abdominal cavity in his search for the testicle, it is the operator and not the testicle which is lost, with often a far too poor prospect of finding himself and recognizing the definitely located and attached organ.

Too many operators, and especially beginners, search for and attempt to identify the testicle without considering the relations to the gland of the gubernaculum and vas deferens. Searching independently of these for the gland is like a shore fisherman on a dark night, who has securely hooked and landed a fish in the darkness and starts groping about to find it, instead of following his pole to the line, and thence along the line to the hook, where the fish is definitely fixed and located. So, in castrating a cryptorchid, the testicle need not be "found" in the most common meaning of the word, because it is not "lost," but the epididymis and vas deferens are definitely and closely moored at the posterior commissure of the internal ring by the gubernaculum and at the proximal end of the epididymis, securely fixed, is the gland itself.

Going back to the course of the operation, when the operator has reached the internal ring or its immediate vicinity, many operators diverge from the technic we have recommended.

Instead of penetrating the ring, they push somewhat upward and forward, and penetrate the fascia of the small oblique muscle. By this plan, the insertion of at least one finger in the abdominal cavity is necessitated, which, by the direct method we have suggested, may be obviated. Beyond this, the operation is identical.

It is, we believe, erroneously contended by the advocates of this plan that prolapse of the abdominal viscera is thereby obviated. The only cases of visceral prolapse from cryptorchid castration observed in our clinic have been patients operated upon by experienced castrators who were uncompromising devotees to this plan, and applied the technic in their operations.

In the ordinary cryptorchid castration, where the testicle is small and flaccid, and where it is drawn through the ring by traction on the vas deferens and epididymis or the withdrawal is supplemented by the very slight dilation of the ring by the insertion of one finger, the danger from visceral prolapse is very remote indeed. We have not observed the accident under these conditions.

If the entire hand is forced through the ring, admittedly there is danger of prolapse. If the entire hand is forced through the fascia of the small oblique above and anterior to the internal ring or elsewhere in the vicinity, the inevitable rent will pass down and involve or pass alongside the ring and produce a tear essentially identical with that caused by forcing the hand directly through the ring.

Should the testicle fall within the second or third class we have mentioned, and be greatly enlarged, so that it must be removed entire, it matters little whether the internal ring is enlarged to permit its escape or the same sized opening is made in close proximity to the ring. There results a great rent through which viscera prolapse is highly probable. Should the operator know in advance that he has a testicle of extraordinary size to deal with, he should abandon the inguinal route and choose the

upper flank as the safer and better. Indeed, under modern surgical technic, the flank operation is in any case quite as safe as the inguinal, whenever the operator inserts his hand into the peritoneal cavity.

Should the testicle be in a pathologic state, and adherent to the intestines or other viscera, the flank operation is advisable or even necessary. In the one pathologic testicle removed in our clinics, the patient being a pig, the testicle was firmly adherent to two loops of small intestine. It was necessary to draw these out with the gland and dissect them away.

In other animals than the horse, we constantly prefer the flank operation, except we can recognize the epididymis in the inguinal region, and draw the gland out by traction.

For the flank operation, the patient is secured in lateral recumbency with the head end inclined, the flank shaved and disinfected, and an incision is made for flank spaying, of a size to admit one finger or the entire hand, according to the conditions.

In small pigs and dogs and cats, we have found the small wound sufficient. In large boars we have been forced to make the opening large enough to admit the hand.

Inserting the index finger or, the entire hand, the operator frequently recognizes the gland at once, lying just by the incision. Otherwise he reaches the inguinal ring, grasps the gubernaculum, glides along it to the epididymis, and thence to the testicle.

In cases of double cryptorchidism in small animals, both testes may be removed through one incision, or, having opened the wrong flank when but one gland is retained, he may still complete his operation through the erroneous incision. He merely needs pass his index finger or his hand along the floor of the abdomen, across to the opposite inguinal ring, grasp the gland, draw it across to the other side and out through the incision.

So, in the cryptorchid horse, if he is a double cryptorchid and the operator has inserted his entire hand in order to secure the first testicle, he should not make a second wound, but reach across between the viscera and abdominal floor, seize the second testicle

and remove it through the first wound. Likewise, in operating upon a horse with one abdominal testicle, where the scrotal testicle has been removed, and the operator errs by cutting in upon the wrong side and has inserted his hand into the peritoneal cavity, he should not make a second wound, but remove the testicle through the wound already made.

After a cryptorchid testicle has been withdrawn from the abdomen, the method of severing the cord is usually a minor matter. In our first class, which includes probably 99 per cent. of the cases, and in which the gland has been arrested in its development, it is comparatively non-vascular and does not bleed.

The completion of the operation may vary. In the flank operation, the abdominal wound is naturally sutured. If the inguinal operation has been cleanly accomplished with unimportant laceration of tissues and without danger of visceral prolapse, it may well be sutured. If there is danger of visceral prolapse or of serious infection, antiseptic tampons should be inserted up to the internal ring, and held in position by sutures.

By means of large tampons, an enormous rent in the abdominal floor may be successfully closed, and prolapse obviated. In large rents, the safest way to tamponade is to take a broad and ample piece of cheesecloth, and spread it with its center over the wound. Then take masses of convenient size of gauze, cheesecloth or cotton, boiled, immersed in a disinfectant and pressed dry, and push them into the internal ring, inside the sheet of cheesecloth. No matter should it extend a few inches into the abdomen, it cannot escape. When the wound is well filled, the tampon is secured in place by scrotal sutures.

After twenty-four to forty-eight hours the sutures are to be removed, the packing inside the sheet of cheesecloth cautiously withdrawn, followed by the sheet of cheesecloth itself.

Blood clots are then to be mopped out with antiseptic gauze, and, if deemed advisable, a new smaller tampon inserted for another day.

According to the degree of infection, the wound may be let alone or mopped out daily with swabs of antiseptic gauze, prefer-

ably saturated with tincture of iodine. The inguinal wound should not be irrigated, lest the antiseptic be forced into the peritoneal cavity.

Should fever arise, and not be promptly relieved by local handling of the wound, we recommend large doses of quinine or potassium iodide, usually preferring the former. To a medium-sized horse we give 1 to 3 ounces of quinine daily until the fever yields or toxic effects, such as trembling or diarrhoea appear, when we change to potassium iodide.

The mortality in cryptorchid castration is not well known. In the ninety-one cases in our clinic there were included 28 pigs, 1 dog, and 1 cat, among which there were no losses.

Of the 61 horses, 56, or 92 per cent., recovered, and 5, or 8 per cent., died. These losses are abnormally high. Four of the five cases succumbed to infection.

In the earlier years of our clinic, the operations were essentially all by students. In many cases six to ten different students each inserted his hand into the inguinal wound and palpated the parts. Three of the fatal infections resulted from this practice.

This plan was then abandoned, since which but one fatality has occurred from infection, following the operation by a member of the staff.

In our clinic we have had another obstacle to meet. The late Professor Williams, of Edinburgh, wrote more than a quarter of a century ago advising against the castration of horses when the wind was from the east, and to avoid operating in any kind of weather in the neighborhood of a veterinary college.

Whatever may be the effect of an east wind in England, the dangers of operating in a veterinary college are not to be ignored. Prior to the days of antiseptic and aseptic surgery, surgical operations on man in a hospital were followed by appalling mortality, but the mortality from wound infections in hospitals for man have been very largely overcome.

Veterinary surgery offers a different problem, especially in the horse, and the details of efficient asepsis and antisepsis in veterinary hospitals is not yet satisfactory. A prime difficulty

in our work is cheapness in the construction and equipment of our veterinary hospitals, with limited opportunity for efficient disinfection.

From the beginning of our clinic in 1896 up to a recent date, we have noted an increased tendency toward serious infections, from the opening of the clinic in the autumn to its close in June. The hospital and operating room were then vacant and open for the summer months. In other words, the presence in the hospital and in the operating room of cases of fistulous withers, poll evil and other chronic, profusely suppurating maladies so befouled the establishment that virulent infection abounded. Our cryptorchid castrations came almost wholly toward the close of our school year, when infection of our hospital had apparently reached its highest virulence. This we have fought so energetically that we now believe we can perform most operations in our hospital with greater safety than outside, and believe we can castrate as safely as anywhere. Neither do we observe increased infection as the year advances. In fact, we last year extended our clinic to cover the entire year, and are still able to keep wound infection under satisfactory control.

Aside from the disinfection of the instruments and of the hands, arms and clothing of the operator, there are other neglected sources of infection which the veterinarian should recognize.

Our casting apparatus constitutes a highly dangerous bearer of virulent infections, and the body surface of the animal, with its massive coat of hair, which it is perhaps shedding, affords ample opportunity for the entrance of infection into the wounds. We should devise better means for obviating these.

Aside from infection, the mortality from cryptorchid castration is well nigh negligible. Of course, casting accidents may occur, and some losses have taken place from intestinal prolapse. The latter can, and should, always be obviated.

Among our five deaths, one was due to an accident based upon an error. We opened the patient on the wrong side, recognized the vas deferens of the testicle which had been removed,

but, before we were aware, had made a rent in its peritoneal fold. We reached across to the opposite side, grasped the testicle and removed it through the wound. A loop of the small intestine dropped through the peritoneal rent behind the vas deferens of the testicle which had been removed at a prior date, the intestine became strangulated and the patient succumbed. Had such a result been anticipated or thought of as a possibility all danger could have been obviated, after the rent had been made, by rupturing the vas deferens, thus leaving no place for the incarceration of the viscera.

So with other complications which may arise. The operator should preserve his equanimity, and, in cases of error or unexpected complications, promptly and coolly meet the conditions. To this end, the operator needs be fully prepared for emergencies, have the surroundings in all essentials suitable, have abundant help at hand, and, beyond all else, needs be in good physical condition, free from fatigue of body or mind.

In the one fatal error we have recorded, the difficulty was largely referable to the fact that the writer was ill, and should, by all rules of professional action, have been in bed instead of at the operating table. Good surgical work requires vigor of both mind and body, and we are forced to see this if we undertake an operation when we are unfit, and then meet with complications.

THE alumni dinner of the New York-American Veterinary College, held in New York City on April 20, was a most enjoyable one. The menu surpassed all previous ones was the unanimous opinion of the more than eighty gentlemen who partook of the good things served. An idea of the mental feast may be had when we find among the list of speakers Prof. F. C. Minckler, of Rutgers College; Hon. John T. Coughlin, Mayor of Fall River, Mass.; Thos. F. Freel, Esq., Supt. A. S. P. C. A., New York City. Many other gentlemen spoke, including President Hollingworth, of the New York State Veterinary Medical Society. The most conclusive proof of the success of the occasion rests in the fact that Dr. W. Horace Hoskins, Philadelphia, acted as toastmaster.

CONTROL OF TUBERCULOSIS THROUGH EXISTING LAWS.

ADDRESS DELIVERED BY DR. J. F. DEVINE, CHIEF VETERINARIAN NEW YORK STATE DEPARTMENT OF AGRICULTURE, AT THE THIRTY-THIRD MEETING OF THE STATE DAIRYMEN'S ASSOCIATION, HELD AT WATERTOWN, N. Y., DECEMBER 15, 1909.

Mr. President, Ladies and Gentlemen—If the subject “Control of Tuberculosis Through Existing Laws” is one of little or no interest to you, I wish to place the blame where it belongs, as I had nothing to do with the selection of the subject, neither did I know that I was to have the pleasure of addressing your meeting until I received the copy of the program.

The question of tuberculosis, I understand, has been well discussed in your organization many times and as to my explanation of the existing laws, I must offer apologies as I have no legal training and therefore the blame should rest upon the congenial secretary, who has been receiving all praise and no censure up to this time.

In taking up this subject I shall confine my remarks on tuberculosis to the smallest possible sphere that will connect the nature of the disease and the laws for its control. It would be useless to go into detail before such a representative body of educated dairymen as to the cause and characteristics of this disease. Suffice it to say in a hurried way that tuberculosis is known and accepted to be a specific disease caused by the tuberculosis bacterium, first described by Dr. Robert Koch, of Germany, in 1882.

Tuberculosis is also a communicable disease, but it differs from many of the ordinary *specific* and *communicable* diseases in many ways. For instance the period of incubation (by that we mean the time which elapses when an individual or an animal is exposed to a disease to the time when the symptoms of such disease make their appearance). As you all know, most specific diseases have a somewhat definite period of incubation, and if

one of your children were to visit your neighbors or your relatives where some one in that family was sick with diphtheria or scarlet fever and you appealed to your family physician, he could tell you with reasonable certainty how long it would be before your child would come down with the disease or how long time would need to elapse before the danger of coming down with the disease would be passed. He could not tell you that if your child had been exposed to tuberculosis. The tubercular germ, like many other germs of specific diseases has a wide variance in virulency (strength) some of the germs being so mild that they would scarcely cause disease in any individual or animal, and again others are so virulent that if present in great numbers they would cause disease in most any individual or animal, unless such individual or animal be endowed with what is known as natural immunity.

Again tuberculosis differs from other specific diseases in that it does not run a definite course. We all know that if a child were affected with scarlet fever or diphtheria, that the disease would be likely to pass through its various stages in about so many days, and again your family physician could advise you as to about the time of the crisis, when the disease would then either terminate fatality or convalescence begin. Not so with tuberculosis. The duration of the disease would depend upon the virulency of the infecting germ, the location of the infection and the resistance or vitality of the person or animal affected. The resisting forces, leaving aside natural resistance, would be influenced greatly by the environments in which the person or animal lived; good food, fresh air, sunlight and proper exercise being conducive to good health and resisting qualities. Again good air and sunlight weaken the germ; in fact kill it, if exposed long enough and so indirectly assist the animal's resistance.

Tuberculosis differs in another important way from these diseases and in a manner that is of particular interest to the stockman, in that if an individual affected with the ordinary specific disease survives that disease, and returns to health without any of the sequels that sometimes follow such diseases, the body is

restored to as normal a condition as ever. This is not so when a body is once seriously infected with tuberculosis. Tuberculosis is a parasitic disease. The bacteria do not produce these effects by secreting a poisonous substance known as toxine which circulates through the body causing acute poisoning in the same sense as does the diphtheritic or tetanus bacillus, but the bacteria of tuberculosis divide by a process known as fission, one bacterium becoming depressed in the center like a sausage link, so to speak, this dividing into two and these again dividing into four and so on, and living as parasites upon the organs in which they are located, eating away with more or less rapidity, depending upon the virulency of the bacteria and the amount of resistance or lack of resistance of the tissue upon which they are living; in other words, depending upon the strength of the germ as well as the strength of the animal body in which they are living. If these organisms progress in their work the parts or organs in which they are located either become hard and possibly swollen, destroying their function (usefulness) or break down and form abscesses, or there may be a gradual waste, as is the case with tuberculosis of the lungs where the lung tissue is broken down and thrown out by expectoration. The saying that a tuberculous individual sometimes has but one lung or part of a lung is more literal than is ordinarily supposed; since it is oftentimes so that the sufferer's lung has actually been broken down and coughed away. Therefore the arresting of tuberculosis is not as secure as that of most other diseases. These bacteria may remain in a dormant or semi-dormant condition for an indefinite period, or the affected area may become encapsulated by lime salt deposits or bands of fibrous tissue, nature's way of healing, and at any time that the system might be weakened in any way, perhaps by another disease, these lesions light up anew and the disease make rapid progress and oftentimes causing death from acute tuberculosis. How long the germ might lie dormant in an infected area without causing the disease to progress or without dying we do not know definitely at the present time. This, like many other things concerning the control of this

disease we hope to gain more and more knowledge on each year. However, we do know at this time that it is possible for an animal to become infected as a calf, due to exposure in an infected herd or drinking milk containing tuberculosis bacteria and show no evidence of the disease until maturity is reached or when the strain of the maternal functions and lacteal production, or confinement in a dark, dirty, unventilated stable lessen the resisting forces of the body. Any veterinarian who has had experience in a dairy district knows that this is particularly true in herds that are kept with the sole intent of milk production in close quarters and are heavily fed; and it is not an uncommon thing to find the choicest animal in such a herd doing well and looking healthy in every respect, not exhibiting the slightest symptom to cause even a suspicion of tuberculosis infection; and still, let this very animal become stricken with some slight ailment or perhaps have a little difficulty at parturition or retention of the membranes and with the most conscientious and proper treatment the animal will gradually lose flesh. Do what we may, she succumbs, and post-mortem examination reveals tubercular lesions characteristic of such an illness and death. The fact is forced upon us that while we have been treating and trying to abort the progress of some other ailment, tuberculosis has been undermining the vitality of the animal and death results. Therefore applying this knowledge to our dairies, we maintain that an animal that is once known to be tubercular is unsafe to mingle with a healthy herd or animal, because even though the lesions may be very slight and of such a character that with open air treatment and no great strain on the system, the lesions might become healed and stay healed forever under such favorable conditions. This is not practical with our present methods of dairying. We know the dairy cow is kept for her milk flow or for her reproductive qualities or both, and without such she would not be much of a dairy cow. We also know that the heavier she is fed and milked the heavier the strain on the system, and it is an unfortunate fact that these animals succumb to the disease much quicker than the non-productive animal, and I believe that it is established to

the satisfaction of all who have given this question much attention that bovine susceptibility to tuberculosis is almost alarming and that in order to ever rid our dairy herds of tuberculosis it is almost imperative that we guard against close cohabitation of the healthy with the diseased as well as the possibility of any infected matter, milk or other substances being taken into the system by the digestive tract. The feeding to calves of unpasteurized skimmed milk from creameries accepting milk from miscellaneous herds is one of the curses of our dairy industries of to-day.

Knowing this much of the characteristics of the disease, the next thing that interests us is how can we know when an animal is tuberculous. The two methods best understood to-day are the physical examination and tuberculin test. Unfortunately the physical examination cannot be relied on alone in the greater percentage of cases. Some of the symptoms that we might find in clinical cases would be an unthrifty look, perhaps a short deep cough or possibly diarrhoea and a temperature denoting febrile conditions. The temperature might be moderate or might be high. Again if the lungs were affected we might find dull areas on listening or sounding and increased breathing murmur on other spots. Angular glandular enlargement at point of shoulder or in the neck back of the jaw bone or near the stifle are oftentimes suspicious and occasionally positive symptoms. Hardening of the udder proper or the mammary lymphatic glands at the top of the udder is always suspicious. You will notice that I have made all of these symptoms conditional as only an expert could decide their significance, since many of these symptoms might accompany diseases other than tuberculosis.

TUBERCULIN TEST.—As to the use of tuberculin, I take it that you are all familiar with the procedure of making a tuberculin test and if any of you are not, you will find full printed instructions for making such a test on the backs of all tuberculin charts issued by the Department of Agriculture, which may be had for the asking. Briefly tuberculin is prepared by inoculating glycerinated bouillon with human tubercular germs and then

placing in an incubator, maintaining a proper temperature (about 37 degrees C.), allowing it to remain there until the growth ceases, which usually takes from four to ten weeks. The substance is then boiled and filtered in order to kill and take out all germs; then it is again heated and filtered, this making it a sterile substance or a reagent. Therefore any one claiming that tuberculin can produce tuberculosis simply displays their lack of knowledge and I have yet to hear of any one ever finding a living tubercular germ either microscopically or otherwise in tuberculin prepared at recognized laboratories.

The question is sometimes asked, is tuberculin infallible? My answer is no; nor is any agent which is the product of man's ingenuity infallible. But we do claim that properly prepared tuberculin in the hands of a capable individual is one of the most accurate diagnostic agents known to man to-day. There are conditions which would render tuberculin inaccurate, most of which are now pretty well understood. Some of these are great irregularity in housing, feeding, watering and handling the animals at the time of testing, exposure to extreme weather either hot or cold. The influence of weather on an animal's temperature is of more importance than some are wont to believe. This can be demonstrated to any one's satisfaction by comparing the midday temperatures of a hot day with those of a pleasantly cool day, or with the cooler portions of the same day. Therefore, in my judgment, to make a satisfactory test in extreme weather, unless animals are housed under the most favorable conditions, it is necessary to have morning temperatures on the day on which the tuberculin is injected, to compare with the morning temperatures after the injection. Young stock usually carry a higher temperature, which varies more than mature animals. This is more noticeable in milk-fed animals or animals that are not accustomed to being handled. Advanced pregnancy will occasionally influence an animal's temperature. I say occasionally, since I believe too much stress has been laid on this by some. I have frequently made tests on large herds where most of them were springers, and some have freshened during the test, with

little or no variation in their temperatures. It is true that some of these animals may be carrying an abnormal temperature and in such cases or in other cases where matured animals' temperatures are running around 103° Fahrenheit or over, they should not ordinarily be injected with tuberculin, since such tests are usually unreliable and never satisfactory. This is equally true with animals which happen to come in season at the time of testing. Animals which are affected with what we term open clinical cases will sometimes fail to react; but such cases are usually easily determined by physical examination. Again animals in which the disease is arrested, all lesions being encapsulated so that the tuberculin cannot reach the germ will fail to react, which explains the necessity of repeated tests of a herd where tuberculosis has once existed. It also explains why an animal might react to one test and not react to a subsequent test and still break down and react later.

Animals which are still in the incubative stage of the disease might pass a very careful and satisfactory test and react some two or three months later when the disease is more positively established.

Accidents and other ailments are always to be considered as well as the malicious administration of drugs or recent inoculation with tuberculin. The virtue of these, however, is over-estimated and a well-informed veterinarian can now cope pretty safely with such practices.

WHAT THE STATE HAS BEEN DOING THE PAST FEW YEARS IN ASSISTING THE STOCKMEN TO RID THEIR HERDS OF TUBERCULOSIS.—One wishing to have their herd examined or tuberculin tested by the state, upon making known their wish to the Department of Agriculture, an application form is forwarded to them, which is to be filled in and sworn to; the applicant agreeing to do certain things, one of which is that, after the state has made a test and divided the diseased and non-diseased animals, it is to be agreed that no new animals are to be put in with the non-reacting herd unless previously tuberculin tested. You can

see the advantage of this, since if the party were allowed to replenish his herd with miscellaneous animals he might much better keep his original herd. It is quite probable that some of the reacting animals will be fully as good or much better than anything he could buy in the open market and surely equally as safe. The applicant also agrees to allow a retest of the non-reacting herd at a satisfactory time, as well as to improve faulty sanitary conditions. The entire test is conducted at the expense of the state and the reacting animals are then appraised by a state appraiser. If such appraisal is not satisfactory to the owner or those in charge, it is their privilege to have an appraiser of their own choice and their appraiser and the state appraiser choose a third whose judgment shall be final. The amount of indemnity allowed is as follows: The animals are appraised for their full market value, providing such value does not exceed \$75.00. The law then provides that the owner may retain any of the reacting animals that appear physically sound, keeping them under certain restrictions prescribed by the Commissioner of Agriculture, with due regard to public health. Such restrictions in brief are that they shall not mingle with other animals unless such other animals are known to have tuberculosis and that their product shall not be sold or fed unless it is properly pasteurized. Should the owner prefer to have the state remove such animals from his premises, the state may, if breeding and quality warrant it, place them on an experimental farm to be kept under restrictions such as the owner would need to have kept them under and the owner is then allowed 80 per cent. of their appraised value. If the animals are not considered too valuable to be slaughtered, they are then shipped to an abattoir where they are regularly slaughtered and post mortemed. The result of the post mortem determines what per cent. of the appraised value the owner shall receive. For such cases as are defined as localized, the owner receives 80 per cent. of the appraised value and for such cases which are defined as generalized the owner receives 50 per cent. of the appraised value. Localized carcasses are usually passed for food and generalized carcasses are condemned and tanked. Any

monies received for carcasses or hides sold by the state revert to the State Treasurer and not to the funds of the Department of Agriculture.

New Laws are enacted and others amended year after year, with the idea of improving specific conditions and requirements in matters of state wide importance. The enforcement of these laws is very wisely distributed under different divisions or heads. The Department of Agriculture is charged with the enforcement of certain laws pertaining to the live stock industry of the state as well as matters pertaining directly or indirectly to the health of the people of the state. Of the latter we might refer to the pure food laws which guard against the adulteration of canned goods put on the market for human consumption.

The Department is also charged with the enforcement of the law pertaining to the slaughtering of and shipment of calves, for food, that are too young to be nutritious or wholesome.

It is also charged with the enforcement of the Oleomargarine Law which is to protect an unsuspecting consumer from buying a substance for butter which is not butter.

Another important function of the Department of Agriculture is the suppression and control of contagious diseases and recently there was put on the statute books laws controlling the use of tuberculin in this state as well as requiring the reporting of all tuberculin tests to the Department of Agriculture. The law also specifies how the product of a tuberculous animal must be treated before it can be fed to other animals or put on the market for sale for human consumption.

Unfortunately some of our dairymen who have absolute faith in all the protective measures of the other laws heretofore mentioned, object to the department having anything to say relative to their cattle or to the disposition of the product of such animals, even though the animal is known to be diseased. If we stop to think a minute, is this not a little selfish? If we are to receive protection where we are interested, should we not co-operate in the enforcement of laws to protect our neighbors' rights? Some even go so far as to criticise the Commissioner of Agri-

culture for the strict enforcement of these laws. It is unnecessary to say to you, who are acquainted with our present Commissioner, that he is one of the most honest and sincere, as well as one of the greatest workers that ever held an office of public trust, and his one thought, first, last and always, is for the betterment of the Agricultural and Dairy Industries; and I would say to any of you who do not know him, get acquainted with him; and if any of you are troubled with spring fever, go to Albany, get under his immediate jurisdiction for a time, and it will do more for your nerve force than a whole barrel of Peruna.

The Department of Agriculture does not say positively that the laws as they are to-day are the best and it is probable that they could be improved; and just criticisms or suggestions, when honestly given, are always considered, when practical and applicable. I can say to you in all sincerity that if the present laws pertaining to the use of tuberculin are not the best possible, they have already had some good effect in controlling the dissemination of tuberculosis from herd to herd in our state. I could quote to you several instances as proof of this. Time will not permit this, but I cannot refrain from telling you of one occasion. A gentleman had eleven head of pure bred cattle entered into one of your large sales recently. He had them tuberculin tested, then came to our department and asked us to approve the certificates. We told him we could not do so since we had evidence that led us to believe that the man who had made the test was not giving correct results, which, of course, might have been due to any one of several reasons. He asked our advice as to what he could do in the matter, since he had his car ordered, and we told him the best thing to do at such a late hour would be to have a veterinarian concerning whose work there could be no question, retest the animals. He immediately arranged to have this done and came back to see us three days later, stating that he had had the eleven animals retested and that six of them reacted, and one of which was suspicious. One of these animals had been twice tested by the man whose certificate he wanted us to approve, and to satisfy himself he and the veterinarian whom we approved of,

had taken the animal out and slaughtered it and found it affected with generalized tuberculosis.

Now, gentlemen, suppose these animals had gone to the sale and had been distributed to different buyers, remember that there is a possibility of their having been sold to seven different buyers, having clean herds, such herds being made clean after years of careful testing, disinfecting and other precautions; the introduction of these diseased animals into their herds would have undone all that years of careful and patient labor had done. I ask you in all fairness, was the preventing of this not a good thing for the dairy industries of this state? Would it not repay many of the so-called annoyances that the law may occasion? Cases similar, if not quite so outrageous as this, are occurring from time to time, but it is now not quite so easy for the unscrupulous stockman, perhaps with the assistance of a dishonest horse doctor (please do not speak of such men as veterinarians), to make a test of a herd privately, concealing the results and passing the diseased ones to an unsuspecting neighbor.

I shall not tire you by discussing this subject further. I simply make one appeal, that we must unite in an active effort toward the end we all desire, namely, the eradication of this scourge, that is ravaging our herds. Let us also each do our share in guarding the use of that most useful agent, tuberculin. Our stockmen and our veterinarians should be as Cæsar wished his wife, not only above guilt, but above suspicion.

THE Zeta Chapter of the Alpha Psi Fraternity was installed in the Veterinary Department of the Colorado State Agricultural College Thursday evening, March 24, 1910, at Ft. Collins, Col. The Alpha Psi is a national veterinary fraternity and was established at Ohio State University in 1906. It now has flourishing and prosperous chapters in most of the leading veterinary institutions in America. Dr. N. J. Miller, representing the National Council, assisted by several honorary members, conducted the installation proceedings. Immediately following the initiation, all enjoyed a most elaborate spread at the Linden Hotel, after many responsive toasts were given.

COLIBACILLOSIS.*

BY DR. L. VAN ES, AGRICULTURAL COLLEGE, N. D.

Of the diseases which next to tuberculosis and infectious abortion are most liable to inflict serious damage to our dairy-men and breeders, calf diarrhoea, or scours, occupies a more than prominent place, and while this is not less true in the breeding centers in this country than in those of the old world, it must be admitted that on this side of the ocean the disease has not received the serious attention which it so well merits. This fact, as well as the economic importance of the disease, is the reason why I felt justified to ask that this subject be given a place on our program.

The disease in question was described for the first time by Tolnay in 1799. This observer regards the disorder as an enteritis springing from a faulty digestion of the milk and did not seem to suspect its infectious nature.

The fact, however, that in so many stables the disease assumed an enzootic character gradually led to the suspicion of its true nature.

Delafond hints at the possibility of contagion in 1844 and Obich, writing in 1865, expresses the idea that the enzootic character is due to a virulent substance contained in the fæces of diseased animals. Franck (1876) attributes the infection to a contagion derived from the soil in the stables, which by contamination of the vaginal mucus and the skin of the dams infects the calves either before or during birth.

Dieckerhof speaks of a facultative parasite infecting the young animal soon after its birth.

* Presented at North Dakota Veterinary Medical Association Meeting, Fargo, January 18, 1910.

A systematic bacteriologic study of the disease was undertaken by Gutman in 1884, and his work was taken up by Perroncito in 1885. It was then found that the blood of the heart and the intestinal contents contained micrococci, which were pathogenic to calves and guinea pigs.

In 1892 Jensen, of Copenhagen, published the results of an investigation of the disease, in which he attributes the disease to an organism which inhabits the normal intestine, and which is closely related to the bacillus coli communis. Those results, subsequently confirmed by numerous other authors, led to the study of the disease in the right direction.

In 1899, Poels showed the important part played by the navel as a port of entrance to the infection, and also called attention to the fact that quite a number of bacterial species are capable of producing a fatal diarrhoea in new born calves.

The fundamental researches of Jensen conducted since his first publication, however, showed that in a preponderating majority of the cases the coli bacillus proved to be the etiologic factor, while the Copenhagen professor furthermore proved the correctness of his assertion by the preparation of an immune serum against the coli bacillus, which proved to be a certain means of prevention in the infected stables.

While the possibility of etiologic factors, other than the bacillus coli communis, must be continually remembered, the writer feels warranted in calling attention to the disease under the name of colibacillosis. The few cases of calf scours which he had occasion to examine in this country always revealed the presence of the *B. coli communis* in pure culture in the heart blood and the spleen, and while this finding alone does not constitute absolute proof as to the cause of the disease, it certainly is a good ground for suspicion.

Like most of the infectious diseases, colibacillosis is most liable to occur in those regions where breeding is carried on in the most intensive manner, and as animal husbandry is becoming more and more developed, the disease is gradually becoming more

frequent and has reached a stage which must be reckoned with in the management of our pure bred and dairy herds.

According to the virulence of the infectious agent and the nature of the local conditions, the mischief produced by the disease varies.

In some instances the damage remains confined to a comparative small percentage of the animal calf crop, while in others again all calves die within two to three days after birth. In many stables the disease becomes enzootic and springs up at each calving season.

The coli bacillus associated with the disease under consideration is in all respects identical with the bacillus coli communis, present in the normal intestines of most mammals and which was first described by Emmerich in the early eighties. The organism only differs in one special feature, and that is its violent virulence when introduced into the body of new born calves. This virulence has probably been acquired by passage through the body of animals, as it is more than probable that the colibacillus of colibacillosis is originally derived from the intestinal canal of healthy animals.

There they are comparatively harmless, as they are not capable of passing through the normal mucosa. In the event, however, of the impairment of this membrane by whatever cause, the bacilli may find their way into the general circulation, and there and in the remote organs exert a pathogenic influence.

The passage through the intestinal mucosa in young calves is, according to Joest, particularly enhanced by the fact that shortly after birth the intestinal epithelium is not yet provided with the protective mucus zone common in older animals. In addition to this, it must be remembered that the stomach at that age has not yet began the secretion of the acid gastric juice, so that organisms passing through that organ are exempt from its inhibitory influence on bacterial development and vigor.

There is some good evidence to show that the virulence of the organism increases with every animal passage, so that the

descendants of a once relatively harmless variety may in this manner become mischief makers of prime importance.

It is a well-known fact that coli bacilli obtained from various sources, will show a great number of varieties, as to their pathogenic properties, and some of their peculiarities manifested under cultivation. This fact is of great practical importance when attempts of immunization are to be undertaken, as will be pointed out at its proper place.

It has been pointed out above that the coli bacillus from healthy animals may develop a high degree of virulence for young calves, so that the disease is capable of springing up in a herd without being brought in from the outside. Any influence which is liable to render the intestinal mucosa of the calf vulnerable, such as errors in diet, the introduction of irritating substances, etc., is liable to start the otherwise harmless organism off on a career of mischief.

When the stable once harbors an organism, which has in the manner indicated assumed pathogenic properties, the opportunities for infecting the new born become manifold. The disease producing coli bacillus is now omnipresent and even invades the vagina of the dams, so that the mouth of the calf becomes contaminated even before it has seen light. It is, however, probable that the most common means of infection is furnished by a young animal sucking from a contaminated udder. The mouth always is the most frequent entrance point for the bacillus, but the possibilities of infection through the abrasion of the navel must not be overlooked. The possibility of an intra-uterine infection is by no means excluded.

Susceptibility to the disease is greatest immediately after birth and most of the cases that come to our attention are less than three days old. The susceptibility is further increased by any condition which tends to irritate the intestinal mucosa or which depresses the vitality of the calf. The administration of boiled milk directly after birth is liable to so affect the resistance power of the mucosa as to cause a fatal coli infection. The withholding of the colostrum even may bring about such a condition.

The first evidence of the disease is shown shortly after birth as cases of colibacillosis after the fifth day of life are exceedingly rare. The animal seems tired, shows little or no appetite, and usually remains down. Spasmodic contraction of the limbs during that period are not uncommon.

Diarrhoea is an early feature and most infrequently precedes all other symptoms. The faeces are very thin, often watery, have a light yellow or grayish white color, and a very fetid odor. Often coaguli of milk are present, while a frothy appearance is not seldom seen. Evacuations are accompanied by considerable tenesmus. Later blood may make its appearance in the faeces. A rise of temperature is noticed early in the disease, but owing to the weakness, which so soon becomes a feature in the disease, is usually of but a short duration.

The frequent and feeble heart beats, as well as the shallow respiration, are evidences of the growing weakness.

When the fatal issue is somewhat retarded, the animals present a dismal picture, with their deeply sunken eyes, hollow sides and dead coat. The general weakness finally deepens into a coma, the common forerunner of the end.

The mortality figure is very high and even in the milder forms of the disease runs up above 80 per cent. The losses on an average are above that percentage and even animals surviving the first attack are apt to suffer a relapse or fail to develop in a normal manner.

The occurrence of the disease within the first days after birth and its apparent infectious nature distinguishes coli bacillosis from the ordinary gastro-intestinal catarrh, such as may result from dietetic errors.

Autopsy reveals marked emaciation of the carcass. The mucosa of abomasum and small intestine is congested or may even be ecchymotic.

The intestinal adenoid elements are hyperplastic. The intestinal contents correspond to the condition of the faeces already

mentioned. The rectum is thickened, edematous or inflamed. The mesenteric lymphnodes are enlarged and often hemorrhagic.

Medicinal treatment is usually not followed by the desired results. The fact that great numbers of the causative organisms enter the general circulation at an early stage of the disease explains the futility of active dosing.

Where such is to be undertaken, however, it must be directed against the intestinal irritation and against the general weakness. A mild purge, such as castor oil, may be given with a view of ridding the intestinal canal of its noxious contents. This may be followed by emolients and adstringents, such as a combination of bismuth subnitrici and gum arabic. To this a little opium may be added.

The tenesmus may be combatted by enemata of weak creoline solutions.

The animal's vitality must be supported by stimulants, among which alcohol, especially in the form of egg-nogg, occupies a prime place. Coffee and caffeine also can be made use of.

Preventative measures lead to more encouraging results. The proper isolation of sick animals and the complete destruction of carcasses dead with the disease, followed by a thorough disinfection of the premises must always be recommended.

In stables, where the disease appears to have assumed an enzootic character, the stable should be disinfected once a month. The feeding of the calves must be undertaken in a scrupulously clean manner, and should the use of sterile milk be desired, its use should not begin until after the calf has sucked out the colostrum.

The use of pasteurized milk is indicated. The disinfection of the vagina and external genitali and the adjacent parts of the dam should be accomplished both before and after parturition. In the general process of disinfection, the navel and stump of the cord of the calf should be included. After the washing of those parts with a weak creoline solution, they should be painted over with a 5 per cent. solution of iodine in glycerine or of an antiseptic of similar potency.

From the present indications it seems that in the prophylaxis of colibacillosis immunization of the susceptible animals is apt to become an important feature.

A serum prepared through the use of a given pathogenic coli bacillus will protect calves against infection with the same. It was, however, found that such a serum failed to protect in outbreaks of colibacillosis, in which another variety of coli bacillus was the etiologic factor. This difficulty was partially overcome by the use of a polyvalent serum. In such a serum a great number of strains of the organism derived from various sources is used as antigen in the preparation and in consequence it is specific against a greater range of coli varieties.

While the results of polyvalent anti coli sera are more favorable, their use to a large extent is no more than a guessing in the dark, still leaving a rational method of immunization to be devised.

This difficulty has seemingly been overcome by Jensen, who uses the variations in the fermentation of sugars by the coli bacillus as a base for classification. In that manner some definite groups of varieties can be established, and a serum may be prepared against each group, and this serum is used in outbreaks where an organism belonging to a certain group is causing the mischief.

The rational application of this method, of course, involves the previous bacteriologic determination of the organism, but as this can be done within a short period and by comparatively simple methods, the difficulty offers no serious obstacle to the application of Jensen's method.

IN *The Daily Picayune*, New Orleans, April 7, a three-page article appears relative to a mass meeting at which a New Orleans Pure Milk Society was organized. Among the list of names requested to serve on the board of directors, we notice that of our own Dalrymple, who is *always* a part of any movement that spells progression.

LIP-AND-LEG ULCERATION (NECROBACILLOSIS) OF SHEEP.*

BY DR. L. E. NORTHRUP.

As a result of several investigations of the disease affecting the mouths and legs of sheep which is more or less prevalent in certain districts of Wyoming, a diagnosis of lip and leg ulceration has been made.

In so far as the name applied to this affection is concerned, it is quite immaterial so long as such a name is distinctive and does not confuse the disease with other affections of an entirely different nature. For instance, it is very important that the name "foot and mouth disease" should not be given to this disease, because the two diseases are totally unlike in symptoms, are caused by different specific agents, and Foot and Mouth disease is so highly infectious that every outbreak which has appeared upon the American soil has been quickly stamped out before it became widespread. Furthermore, the ulcerative condition which affects the lips and legs of sheep does not spread from animal to animal in epizootic form like Foot and Mouth disease, but certain sheds, feed lots, corrals, or pastures become infected with germs causing the disease, which enter the tissues when the mouth or leg is injured by briars, stubble, rough forage, etc., and set up the disease. During the winter when snow is frozen in crusts and the grazing difficult, the lips and legs become injured and the disease may spread very easily.

Lip and leg ulceration is caused by the necrosis bacillus, and as the skin of the lips and legs are involved in many cases, the name of necrotic dermatitis has been applied. It quite frequently happens that the ulcers and sores on the outside of the lips ex-

* Presented at annual meeting, North Dakota Veterinary Association, Jan. 18, 1910.

tend into the mucous membrane lining of the mouth, which accounts for the disease being known as necrotic stomatitis. The important things to recognize are the nature and cause of the disease, and in this connection it may be said that all differing manifestations of the infection by the necrosis bacillus are often brought together under the name or term necrobacillosis. Other names which have been given this disease are acute dermatitis in New Zealand; impetigo labialis in Canada; crusta labialis or contagious pustular dermatitis in England and Scotland, and tiegmaul and malgrund in Germany. The disease also exists in the West Indies, New Mexico, Oregon, Kansas, Montana, Virginia, Maryland, and possibly in other sections of the United States.

The lesions in the early stage usually appear as an acute inflammation of the skin on the outside of the lips. This pimple-like formation is attended by much inflammatory swelling with a decided tendency to form pustules. Then they dry up and form crusts of a dark grayish color and of a fungoid appearance. The growths extend rapidly and become in the course of a few days confluent, forming a large diffused scab, which when removed is found to cover a larger ulcerative surface. Simultaneously with this the lips become tumified, swelling to two-third times their normal thickness. The appetite usually remains good, but the animal feeds with difficulty owing to the sensitiveness of the affected parts. In some cases the scab extends from the lips to the cheeks between the eyes, and at times a muco-purulent discharge appears, which adheres to the nostrils and together with the swollen condition of the lips causes a more or less occlusion of the air passages, resulting in a laborious breathing upon exercise. In some cases the lesions extend into the mouth, producing erosions on the inside of the lips, on the gums, and on the dental pad of the hard palate. These lesions which are of a spongy nature and present a warty appearance are especially noticed in lambs. Lesions on the legs and lips usually co-exist, hence the name lip and leg ulceration. The sheep at this time will show some lameness, especially if the ulcers appear above the coronet, in the fold of the fetlock, or in the vicinity of a joint. The progress and ap-

pearance of the ulcers upon the legs are identical with those upon the lips, and they are soon covered by a thick dry crust, which, when forcibly removed, exposes a granulating surface covered by a thick cream pus. The lesions sometimes appear upon the teats, udders and external genitals of ewes and on the sheath of the bucks; this latter may occur without any lesions being apparent upon the lips or legs and the disease is then known as necrotic venereal disease of sheep, or big pizzle, sometimes erroneously called syphilis or clap. As the lambs are born to such diseased ewes, they may become infected, the lesions appearing about the head and on the legs as irregular ulcers which later form wart-like scabs projecting above the surface. If the disease is neglected, these ulcers may spread over a large area and extend deep into the tissues. The general health of the animal is but little disturbed if the course of the disease is favorable, fever being absent or remaining low (104-5).

Treatment of this disease is very satisfactory if begun in time and applied energetically. It should not be deferred, as better results are obtained by attacking the outbreak as soon as discovered than can be expected if the disease is permitted to spread among the band or penetrate deeper into the tissues of the affected parts. Separate all sheep affected even in the slightest degree. If only a few animals are affected, remove the scab from diseased areas and wash them once daily with a solution of one of the coal-tar dips permitted in the dips for scabies, or cresol solution. If a large number are affected, then you have to treat them under range condition, and the best way then is to have them pass twice daily through a shallow trough with a 5 per cent. carbolic solution or the coal tar preparations. Then swabbing the ulcers on the mouth and lip with the same. Under favorable weather conditions they may be dipped two or three times with very satisfactory results. In cases where the disease has made considerable headway, they must be hand treated by applying a stronger solution, say one part dip to three water, once daily; four or five applications of this is usually sufficient, but in some of the aggravated conditions you will have to use a stronger

caustic, as nitric acid, one to seven water, applied to the necrotic area only.

Experience has shown that sound sheep may be safely pastured upon land that has previously been occupied by animals suffering from lip and leg ulceration, if the winter's frost has been permitted to intervene. The germs of this disease seem to be effectively subdued by this means, and pastures which have become contaminated one season may be considered safe for their customary usage next season. The pens, corrals and sheds, however, must be carefully disinfected to prevent the reoccurrence of the disease, as the baccilli will retain their virulence here for several years.

In connection with this paper, slides showing the following, were run through the lantern: Showing the lesion of the lower lip; beginning to walk lame; 12 sheep of the Dr. Noel experiment were put in a pen with 6 affected and kept there for 8 weeks without any spread of the disease until one's lip was scarified, when he promptly took the disease. Bunch of sheep waiting for the dip. Dip built by the Government, 2½ feet wide at the top and 100 feet long, with the entrance so constructed that the animal cannot see where it is going until on the incline, from which point it cannot return. Tank for boiling the dip; Indiana sheep with scabies—probably saved the state a \$10,000 law suit; his camp at Mt. Taylor; bunch of 4 horned sheep; goats with sheep; the sheep rustle for forage better than without them.

THE Ontario Veterinary College held their closing exercises on April 15 last in the afternoon, Hon. J. S. Duff, Minister of Agriculture, presiding.

THE Chicago Veterinary College closed its twenty-seventh session on the evening of April 5, 1910. One hundred and thirty-seven young men received diplomas.

THE Veterinary Department, Colorado Agricultural College, will have twenty members in its graduating class this year. Commencement date of the college will be June 2.

THE INDIANA VETERINARY COLLEGE held its eighteenth annual commencement exercises on April 1, graduating fifty students. The exercises were held in the amphitheatre of the building, which was beautifully decorated with flags and bunting. About three hundred visitors were in attendance.

COLIC.*

BY C. A. NELSON (K. C. V. C.), BRAINERD, MINN.

This is a subject on which books have been written. Realizing the futility of attempting to write something covering the subject, only one type of colic and only some phases of this will be touched upon in this paper. The word colic, or colicus, is a Latin word meaning a painful state of the colon, and does not signify any special pathological condition. It is, however, taken to have a wide collective application. It is first divided into True and False Colic.

True Colic is generally accepted as indicating a painful state of some part of the intestinal tract.

False Colic obtains from painful conditions of kidneys, uterus and other abdominal organs.

True Colic is further classified according to the etiology of same, such as Spasmodic Colic, Flatulent Colic, Engorgement Colic, Verminous Colic, and Constipation Colic, which may again be sub-divided according to a variety of causes such as impaction, dilation, and paralysis of the bowel, displacement, invagination and volvulus.

Taken as a whole, the most common cause of colic is perhaps heredity or at least a predisposition to weakness and consequent inability of the intestine to properly perform its work. Faulty food and an imperfect system of feeding plays an important part.

One type of colic which is perhaps most often met with in veterinary practice is colic from impaction; due to various causes. The reason for this is the long duration of this kind of colic.

* Presented at the January, 1910, meeting of the Minnesota State Veterinary Medical Association.

Many of the horse owners do not consider colic as a very serious malady. Most of them carry on hand a supply of colic remedies, mixtures of laudanum, ether and what not. Many cases yield to these remedies, especially such cases which persist in getting well in spite of the treatment. When, however, the patient gets worse, after being treated with a number of remedies, the veterinarian is called with the advice that "it must be his water." What does he find? In most cases it is stasis of the bowel, as a result of impaction. Symptoms are too well known to be dwelt on in a short paper of this character. The only important part is to make the differential diagnosis from the other colics, and auscultation at the flank will nearly always tell the tale.

TREATMENT.—This is the topic which is most interesting to the veterinarian. The writer's treatment is an amplification in part, and a modification in part of other authors, and in common with Reeks the keynote is stimulation and elimination.

The first thing is, of course, to get the patient into a well bedded stall or other place which offers protection from injury. If the animal is seen early, before the impacted mass of ingesta becomes too dry, and while the powers of the body remain, one of the following remedies is administered: Barium chloride, arecoline or eserine. The objection to barium chloride is that it must be administered intravenously, which is often difficult to accomplish on account of the restlessness of the patient.

Eserine combined with pilocarpine and a small dose of strychnine is a good agent. Arecoline is similar to eserine in its action, and may be employed in conjunction with the same agents with practically the same results. Before giving any of these drugs, the writer gives an ounce capsule of pulverized ammonium carbonate, which acts as a stimulant and also promotes intestinal secretion.

This treatment can be repeated in one hour or less. Many object to this treatment for the reason of it being dangerous. It

is the opinion of the writer that the danger is overestimated, and those who object the strongest are generally practitioners who have seldom or never used those agents. When they did use it, it was as a last resort. This treatment is not advocated in every case of impaction, but it is believed to be most valuable in well selected cases. It is to be regretted that there is practically no medicinal agent which is infallible in its action. No more so are the agents mentioned. There are cases of bowel stasis in which it is not even advisable to try them. The writer's treatment of these cases consists of an aloetic pill, frequent capsules of ammonium carbonate, nux vomica and colocynth. The latter two agents given in fluid form, diluted ounce doses. Salts and oils may be substituted for the aloes, but with even more uncertain results, and is only advisable in cases of threatening enteritis. Rectal injections of warm or cold water at short intervals will promote peristalsis, and in that way are of some benefit.

If the pain is severe choral hydrate or the H. M. C. tablets prepared by the Abbott Alkaloidal Co. are of some value. If the patient subjected to the treatment does not succumb in less than twenty-four hours they generally make a good recovery.

The first treatment is much to be preferred where immediate relief is possible. When we consider the fact that in the horse, evacuation of the bowel takes place seven to ten times every twenty-four hours, and it will be delayed twelve to thirty-six hours under the latter treatment, it becomes apparent how grave and uncertain the prognosis in these cases must be. It becomes plain that it is very important that more efficacious agents than salts, and oils, or even aloes, should be employed. In common with Reeks, the writer believes that anodynes are of small value; if any, only those should be used which have no tendency to lessen secretion and peristalsis.

Opium which is so valuable in human medicine for allied disorders, should scarcely find a place in veterinary practice as far as this kind of colic is concerned, because it is of so much importance that the bowels should move at the earliest moment possible.

AVIAN DIPHTHERIA OR "ROUP."*

BY DR. O. L. BOOR, MUNCIE, IND.

Roup, or Diphtheria, in birds is an infectious disease that manifests itself on the mucus membrane of the nasal passages, eyes, mouth, pharynx, larynx and may involve the trachea and lungs, and may even extend to the abdominal viscera.

It manifests itself by the formation of a fibrinous greyish exudate, forming upon the mucus membrane of the parts above mentioned, and may be in such quantities as to entirely obstruct the air passages. Ducks, turkeys, pigeons, pheasants and pea fowls are subject to this disease, and it is probable that wild fowl are subject to it.

While Avian Diphtheria is entirely different from the human form, cases are recorded where children have contracted serious and even fatal sore throat from this source. It is also noted by one authority, that the men employed to feed "squabs" by masticating food and blowing into their mouths, contract the disease. While the number of cases of the disease contracted from fowls is small in comparison to the number of birds affected, it is well to use care in handling them, and the habit of carrying chickens to the house to treat them should be discouraged, as there is no doubt but that many cases are transmitted from this source to the human, of which we have no record.

While a comparison of the bacillus causing human diphtheria and the supposed bacillus causing Avian disease shows that, morphologically and in their pathogenesis, that they are in no way alike, nevertheless from the observations of a number of writers it is certain that these diseases are transmissible to human, and from human to birds; therefore it is our duty to use due care

* Read before the Indiana Veterinary Medical Association January 12, 1910.

in handling diphtheretic chickens; especially should the little folks not do so, even if they are the little ones' pet.

It has been claimed that poorly ventilated damp quarters would produce it, but this is not the case if the specific germ that causes the disease is not present, but birds suffering from the disease in a mild form will have the symptoms aggravated and the disease will spread rapidly if kept under such conditions.

About the first symptom noticed in the primary stage of the disease is a tendency to sneeze and wipe the head on the wings, on which there will soon be noticed an accumulation of the exudate, giving them a dirty appearance; fowls with these marks on the wings are often noticed before the sneezing is noticed, and if the owner is wise and heeds this warning, using proper sanitary precautions and treatment, he will cut short the trouble and save the loss that accompanies this malady. On closer examination at this time, a mucus rale will probably be heard in the throat, and you may notice a slight discharge from the nostrils; later you will have the bulging of the sub-orbital sinus, the swelling of the conjunctiva and lachrymal duct, the formation of the membrane; then the sloughing of the membrane, followed by resolution or death depending upon the severity of the attack, and the amount of surface involved.

About eighteen months ago I noticed an article on the treatment of "Roup" in pigeons with diphtheretic antitoxin, and the writer praised it very highly, saying the results were magical. Again at the A. V. M. A. meeting in September, its praises were sung. Shortly after my return from Chicago, I was called to see a flock of 200 Plymouth Rock hens that had recently been purchased from the most noted chicken farm in the country, and found that they were suffering from Roup. On account of their value I was not restricted, and I used diphtheria antitoxin, giving 7/15 minims of the 2,000 units and 5/10 of the 3,000 units as follows:

Sept. 23 6 hens, 10 minims each of 2,000 U.

" 23 4 hens, 10 minims each of 2,000 U.

Oct.	11	1 hen,	10 minims of 2,000 U.
"	15	3 hens,	10 minims each of 2,000 U.
"	23	1 hen,	10 minims of 2,000 U.
"	25	1 hen,	10 minims of 2,000 U.
Nov.	23	2 hens,	7 minims each of 3,000 U.
"	24	3 hens,	7 minims each of 3,000 U.
"	25	3 hens,	7 minims each of 3,000 U.
"	26	1 hen,	7 minims of 3,000 U.
Dec.	2	1 hen,	7 minims of 3,000 U.

You will observe from this table that only hens were affected, and I have at present no theory or explanation for the immunity of the cockerels. Of those treated three died, two shortly after they were brought for treatment, and were unable to stand or take any nourishment, and I consider that the death of these two was due to neglect and delay in treatment. Sanitary conditions were carefully looked after; the sick ones were isolated, and the quarters thoroughly cleansed and disinfected daily, as were also the drinking and feeding troughs.

There has been no cases since December 2, and since that time all of the houses have been sprayed with whitewash, cleaned daily and left open until time for the chickens to go to roost.

The fowls treated were in all stages of the disease and in only a few cases were any of them given the second treatment. If a remedial agent can be called magical, "Diphtheria Serum" as a cure for Roup belongs to that class.

Reference for material of this paper is Moores Pathology of Infectious Diseases.

DR. W. W. YARD, Denver, Colo., is assistant dairy commissioner of the state of Colorado.

DR. A. W. WHITEHOUSE, of Larimer, Wyo., is taking an extra year in Veterinary Science in the Veterinary Department of the Colorado Agricultural College. After commencement in June the doctor will return to his old and well-established practice in Larimer.

MY EXPERIENCE WITH HOG CHOLERA.*

BY DR. F. A. BOLSER, NEW CASTLE, IND.

Hog Cholera, the most destructive disease known to the domestic animal in the Middle West, the one that causes greater loss in shorter time to the farmer than all other diseases throughout the corn belt, the one that has prevented the farmer from lifting his mortgage, the one cause for extreme price of meat, causing many poor people to do without bacon, 30c.; lard, 20c., and all meats in proportion, working a great hardship to all, can be traced in a way to the very great loss of hogs throughout the great hog-raising states by cholera.

The Bureau of Animal Industry of the United States have expended a large sum of money in experimenting and have at last produced a serum, which, if used in time, will immune and save about 85 per cent., and vaccinating aged hogs you can immune indefinitely. Pigs weighing 15 to 20 pounds are immuned until they attain the weight of about 120 pounds, after which the resistance is slight. The offspring from the mothers immuned have a slight resistance, but are not immuned against severe cases. It will not pay to vaccinate large herds of small pigs that have already contracted the disease, as they do not have the vitality to withstand the vaccination and the disease already contracted. I have vaccinated a small herd of 65 pigs weighing 30 to 40 pounds and all died but six. The bureau informed me last Friday that they were turning all small hogs down that were affected, because the recoveries do not warrant the expenditure.

On October 29, 1909, I vaccinated 51 hogs for Lon Hudson; 49 would average 300 pounds and two 600 pounds. Thirteen of the smaller were very sick at the time, so bad that Mr. Hudson at first said, "we will not vaccinate them." The male was so weak that he could not turn over and yet he recovered. I gave to those

* Read before the Indiana Veterinary Medical Association, January 12, 1910.

weighing 300 pounds 120 c. c. On October 31, 1909, I vaccinated 30 weighing from 160 to 250 pounds, all very sick; on November 3d we vaccinated the rest of his herd amounting in all to 130 head. About 50 per cent. were sick at the time of vaccination. We saved 100 of this herd. I am quite confident that if we had commenced when the disease first made its appearance we would have saved 85 per cent. Mr. Hodson had lost 48 large hogs and 75 pigs before any were vaccinated. We were instructed to re-vaccinate any that were not doing well at the end of ten days. Following instructions on the eighth day, we gave the serum to about a dozen the second time; all were very weak, scarcely able to get up by themselves; all died. On November 21, 1909, vaccinated 115 head for Wm. O'Hara. This herd was just breaking out, not many had died and not many sick. However on the abdominal muscles quite a few were purple, clearly showing the infection. Only one died after the injection was given. Mr. O'Hara had a very clean warm place for them, which is very necessary; another important thing is that you starve them for a few days from everything but water. This herd weighed from 70 to 300 pounds. On November 24, 1909, I vaccinated 75 head for John M. Riley, all of them except seven were small pigs weighing 30 to 40 pounds and all very sick. All of the small ones died and two of the large ones. I am confident that it does not pay to vaccinate small pigs that are affected. On November 22, 1909, vaccinated 28 head for Dan Jones, all were affected; all recovered but six. On December 26, 1909, vaccinated 16 brood sows for Mr. Jones; all were affected and some quite weak; seven have died up to this time. The quarters are not warm and they are lousy. Another thing that should be done, and that is have them free from lice by using crude oil, which destroys both lice and nit. If every one would take the sanitary precautions with hogs that they take with other stock, we would not have so much cholera. Sanitary precautions are as essential, yes more so as a prophylactic than the average farmer can be made to understand. I have in mind a man who keeps his hog pen as clean as his barn, and he has never had a case of cholera.

PRURITUS OR MAD ITCH IN CATTLE.*

BY A. F. NELSON, LEBANON, INDIANA.

ETIOLOGY.—Consuming corn husks, corn stalks, corn cobs that have been fed to hogs and partially masticated and dropped out of the mouth or swallowed and afterward voluntarily ejected from the stomach.

SEMIOLOGY.—If occurring in a large herd of cattle, the finding of one dead may be the first sign or indication to the owner that there is anything wrong. If found dead, the animal will show swellings about the head and neck, possibly the shoulders; evidences of the animal having rubbed these parts more or less severely; may be a serous exudate from the abraded surface, or skin may have a leathery appearance; may be evidences of hæmorrhage from the nostrils; sometimes from the anus.

SYMPTOMS.—When first noticed, the animal is seen rubbing its head against any object in reach; not marked at first, but as the disease progresses the rubbing becomes more violent, animal more restless; may rush from place to place, or plunge head onto the ground, seemingly using all the force at its command; bellowing at his stage, and from now on the animal gets rapidly worse and falls from exhaustion and may die in a few minutes.

POST MORTEM.—On examination, the rumen is found to contain one or all of the substances previously mentioned, some properly masticated and some not. In two cases I found lesions of acute gastritis of the rumen, but in no others. Reticulum practically no lesions. Omasum, dry and evidences of congestion,

* Presented at January, 1910, meeting, Indiana Veterinary Medical Association.

some more marked than others. Abomasum, did not show much congestion in any of the cases. Intestinal tract, showed no lesions and the only thing abnormal was the enormous quantity of bile. Bladder, no lesions. Kidneys showed congestion of both cortical and medullary portions in most cases. Liver engorged and the color of gold in all but one case. Gall bladder distended. Peritoneum showed no lesions except where in contact with the stomach.

TREATMENT.—Prophylactic of much more service than therapeutic; however, if one is called early, by going through the herd and giving a strong cathartic, as sulp. magnesia, gamboge and oleum lini followed by liberal doses of salicylate of soda or salol, he is able to abort the trouble. But after symptoms are developed even though slight, medicinal treatment is of but little avail. So it is incumbent upon the veterinarian to go through the whole herd and treat each animal as if it would develop the disease.

SUMMARY.—This is evidently due to a toxine formed by bacteria on the fermented and partly digested material, which seems to effect the liver more than any other organ, and the action of the organisms upon this organ producing the toxic effect on the system in general, and reflex action on the brain, from the fact that the pruritis is confined to the head principally.

DIFFERENTIAL DIAGNOSIS.—The only disease with which a practitioner might confound this disease is rabies; but in rabies there is seldom pruritus in cattle, though it is common in the horse, especially of the nose. Another difference is the animal is not vicious nor irritable at the approach of man; can be driven or caught without producing excitement or convulsions as in rabies.

THE splendid report of the meeting of the Indiana Veterinary Medical Association at Indianapolis, January 12th and 13th in its fourteenth annual convention, will be published in the next issue of the REVIEW.

REPORTS OF CASES.

A CASE OF AZOTURIA.*

By DR. J. BURTON, Wheaton, Minn.

During my practice of veterinary medicine it has not been my lot to treat a great many cases of azoturia, although I have treated a few with varying luck.

The case I am about to describe is not one of any peculiarities as to the disease nor the treatment, but was chosen rather for the unusual conditions before treatment was begun. The patient, a white gelding, weighed about 1,200 pounds, age 18 or 19 years, time middle of February, and the temperature below zero.

On the morning of the day in question, the horse above described, with mate, was hitched to a sled and driven by his owner, started for town. After going a distance of two or three miles the horse began to lag and stumble, but as the snow was very deep and travel difficult, the driver paid little attention, until the horse began to sweat and seemed quite lame in the left hind leg. The driver stopped and made a thorough examination of the foot, thinking he had picked up a nail. Finding everything apparently all right, the driver waited until another team came up, when the horse was started and apparently was all right for nearly three miles more, when he suddenly stumbled against the pole and all but fell. By this time they were quite a distance from any buildings. The driver concluded if he could get about one and a half miles further, he could get the horse in a barn and could then telephone for assistance. But a short distance farther the horse went down, unable to rise, even with two or three men to assist him. Seeing nothing could be done, the horse was left lying in the snow, with only a couple of blankets over him, which of course would not remain in place very long with no one to watch him, while the driver went back home, a distance of about six miles, and procured assistance and a stone boat to haul the horse home on, which was done without much difficulty.

* Presented at the January, 1910, meeting of the Minnesota State Veterinary Medical Association.

After getting the horse in the barn, I was telephoned for, but being out at the time, word was left for me to come as soon as I returned.

I did not get home until after six p. m., and as the owner lived about fourteen miles from town, and the roads heavy, I did not get to the horse until after nine p. m.

Now the horse had been down nearly twelve hours without any medical assistance. When I got to him he was in considerable pain and sweating all over. I immediately drew his urine, which was very thick and dark colored. After his water was drawn, he immediately became easier and lay stretched out, resting for a time; then he attempted to rise, but had no use of his hind limbs.

A sling was used to raise him, but he was so helpless all attempts to keep him on his feet for the time being were abandoned.

TREATMENT.—I now gave him a purgative of eight drams of aloes, in a quart of raw linseed oil, and hot water injection. In a short time after gave him three drams of potassium nitrate and repeated the potassium nitrate in about four hours. I had the legs well rubbed and bandaged, and as soon as possible had hot packs, of oats applied over kidneys and back and patient completely done up in blankets. The hot packs were changed about every half hour, and continued all night. Soon after the packs were applied, the patient commenced sweating again, and was kept warm enough so he did not dry off until after the pack was discontinued. When the patient was rubbed dry as possible, mustard was applied over the lumbar region, and he was well blanketed.

Water was given him several times during the night, of which he drank considerable each time. About nine a. m. we made preparations to raise him, and when about ready to place the sling under him he made an attempt to get up, and with a little help, did get up, but was very unsteady and weak. By working fast we managed to get the sling in place and kept him on his feet for a considerable time. While standing, his legs were again vigorously rubbed, and after they began to warm up and circulation was better established, the legs were again well bandaged. By this time the physic was operating, and shortly after getting up the patient passed water, passing a considerable amount, which was not as dark colored nor as thick as when drawn upon my arrival. After the patient had been up for a

time and circulation more normally established, he seemed to be much easier and began to eat.

I did not hear from the patient for nearly two weeks, when I was told the horse was all right, excepting that he was still lame in the left hind leg. A short time after this, being in the neighborhood, I called in to see for myself how the patient was. Upon looking him over I discovered the anterior femoral muscles had begun to shrink; this had not been noticed by the owner. I prescribed tonics, a strong liniment to be applied to the muscles, and plenty of exercise. The tonic and liniment were used, but the exercise left out, as the owner said he could not bear to force the horse to walk when he was so lame; this continued until July. By this time I was beginning to get out of patience, as during the warm weather some member of the family was in town every few days, and as the horse was a family pet, I was forced to listen to long tales of woe about how lame he was, I never failing to recommend forced exercise. This continued until about the middle of July, when I was called one day as I was passing by the farm to come in and look at the horse again. I asked the owner if he had worked the horse any, to which he replied he had not, whereupon I told him I did not see as there was any use in calling me or anyone else when he did not do as he was told, and I went on. Nothing more was said about the horse, although I saw the owner quite frequently, until about six weeks after, when I met the owner on the road and he told me he had put the horse to work the next day after I was there, and had kept him working every day since, although it seemed hard to work him while he was so lame, but they gave him plenty of time, and in a short time he was walking nearly as sound as ever.

When I next saw the horse, which was about November 1st following, he had apparently fully recovered and the muscles were as plump as ever.

FIBROLYSIN IN TENDONITIS AND TENDOVAGINITIS.*

By C. J. SIGMOND, (O.V.C.), Pipestone, Minn.

Fibrolysin is an aqueous solution of a double salt composed of one molecule of thiosinnamin and half a molecule of sodium salicylate.

*Presented at Minnesota State Veterinary Medical Association, January 12, 1910.

I will give the results obtained in three cases and the results obtained by W. Gottschalk and M. Baruth in other cases in which they used fibrolysin.

Case One.—Mare 12 years old, very lame, had used hot and cold applications, anodyne liniments and blisters, but did not get satisfactory results. I concluded to try fibrolysin; gave two injections; after a week's rest swelling and lameness subsided.

Case Two.—Practically same as No. One; gave this horse three injections four days apart; after three weeks' rest no lameness, swelling practically gone.

Case Three.—Bay gelding, age nine years. This animal had been laid up for seven or eight weeks very lame, had been treated by an empiric without any results. When I saw the animal I decided to use fibrolysin. I gave him four injections of fibrolysin; after four weeks' rest he went sound.

I will try and cite cases treated by W. Gottschalk, with fibrolysin. He used it in treating a fourteen-year-old horse that was no longer serviceable on account of a chronic tendonitis and tendo-vaginitis, with the result that the animal after six injections, at the end of fourteen days, was again put to work.

The second case he relates was that of a nine-year-old horse which received three subcutaneous injections in the diseased leg and three subcutaneous injections in the neck. After twenty days this horse also became serviceable. M. Baruth states that it brings about a regressive change in the well-known connective tissue growths.

The first case he cites was that of a phlegmon of the thigh, accompanied with cutaneous sclerosis. This condition resisted a four weeks' treatment with various salves. After a second injection (subcutaneous) of 11.5 c. m. of the remedy, after an interval of four days almost complete recovery ensued.

The second case was that of an ox. As a result of extreme hard work a non-inflammatory painless, hard, flat swelling about the size of a soup plate formed on the left shoulder. After two subcutaneous injections (the last one made in the center of the neo-formation) it almost completely disappeared. The third case, as a result of an injury to the hock joint and fetlock joint of a horse, a cutaneous sclerosis formed which likewise disappeared after two subcutaneous injections of the remedy.

On the basis of these results Baruth believes that he can recommend the use of a fibrolysin in all cases.

COLIC.*

By DR. BENNET PORTER, Albert Lea, Minn.

It may seem a little strange that I should take so common a disease as colic for my subject, but as common as it may be, nevertheless it is one of the diseases that gives the veterinarian a great deal of trouble and anxiety.

And as for a specific treatment we have not as yet found one. Some practitioners inform me that they do not have much trouble with colic. I am sure that this is not the case with me. As colic has been one of my hardest battles to fight, and with a goodly number of victories, I have also had a great many defeats.

So much so that at times I have been willing to try any remedy that I thought might better my condition.

Last spring while reading the *Veterinarian*, published at Detroit, Mich., I came across Dr. C. E. Bassler's article on the "Therapeutics of Barium Chloride," which was read before the Kansas Veterinary Association, at Topeka, January 12th and 13th, 1909.

But as I had used barium a few years ago, and with such unfavorable results, I concluded at the time never to use it again. But I am convinced now that the unfavorable results at that time were largely due to too large doses.

But during this fall colic has seemed to be unusually bad, and I not being altogether satisfied with eserine, or arecolin, I concluded once more to take up the use of barium chloride.

We will now take up case No. 1. Gelding seven years old, weighing 1,600 pounds, came under my care about 1 p. m.; was in a great deal of pain, perspiring profusely and romping about a great deal in his stall, abdomen being quite badly distended with gas. I first used the trochar to relieve gas, after which I gave one and one-half pints oleum lini with three ounces of terebenth, and followed shortly after with carbonate of ammon., two ounces and one-half ounce nux. Rested for an hour and then gave one grain strychnine, subcutaneously; got a great deal of excitement, but no motion or action of the bowels. Everything seemed to be shut down, and with only an occasional murmur of gas. Gave enemas of warm water freely for an hour or two, emptied out the rectum, but with all this my patient did not seem to be getting any better, but rather, on the contrary, acted a little worse.

I then administered barium 10 grains in 12 c. c. of normal salt

* Presented at the January, 1910, meeting of the Minnesota State Veterinary Medical Association.

solution, intravenously administered very slowly against the blood stream; in three minutes he became quite restless, and in about four or five minutes began to retch and strain and pass from three to four feces at a time.

He continued this for about an hour and there seemed to be a pronounced peristalsis of the bowels.

I then put him in the barn, and let him stand for an hour or so; he still seemed easy. I then gave him an aloetic capsule and he made a good recovery. I have used this treatment on some ten cases, of which only one has died. But this death was from mechanical pneumonia, following four days later, and I, too, am like Dr. Bassler, would no more think of going to see a case of colic without barium chloride with me, than I would think of going to see a patient without my medicine case.

A CASE OF PARAPLEGIA SUCCESSFULLY TREATED WITH SUBDURAL INJECTIONS OF FIBROLYSIN.

By DRS. STEFFEN and STEFFEN, El Paso, Texas.

Complete paralysis of hind extremities in an English bull terrier following a protracted case of distemper.

The usual measures, iodides, mercurials, etc., failing to bring results, it was decided that permanent changes had taken place in the chord which could only be remedied by actual contact with near-normal body solvents. On this hypothesis fibrolysin was selected as the most bland and at the same time the most active agent.

Not being sure of a satisfactory puncture in a posterior region of the column, the atlo-axoid space was selected and an aseptic injection of 2.3 c. c. made directly onto the surface of the chord in this region.

Within an hour and continuing for twelve or fourteen hours, the patient exhibited typical symptoms of a brain trauma, quivering of the entire body, labored breathing and a most violent delirium. These symptoms gradually disappeared during the next twenty-four hours and to our surprise, with their departure came a perceptible improvement in the power and co-ordination of the affected parts. The site of injection received no other treatment than two paintings of tincture of iodine and gave no trouble. At

this writing, eight days later, the patient walks confidently, only a slight lack of co-ordination being in evidence.

CONCLUSIONS.—In our opinion the good results in this case would warrant the use of this treatment in others. We all know how long drawn out these cases usually are. An almost complete recovery in eight days is remarkable. In future cases we shall repeat the injections every four days. For the accurate and safe performance of the puncture we would recommend profound anaesthesia. Forestalling the symptoms of brain trauma, morphine is contra-indicated.

The fibrolysin should be warmed in the original ampule to a little above body temperature before injection. Inject slowly.

DR. CHARLES EASTMAN, B. A. I., has been transferred from Dr. Hick's force at Sacramento to Dr. McKellar's force on "Cattle Tick Eradication" in San Luis, Obispo County, California.

IN renewing his subscription to the REVIEW recently, Dr. J. B. L. Terrell, Dresden, Tenn., enclosed the following clipping from his county paper:

"Robt. Tillman has or did have a curious freak of nature in the shape of a lamb. Beginning with its loins and going backward it consisted to two well developed and perfectly formed lambs, one being of the male and the other of the female sex. Going forward from its loins to its shoulders it was only one body, but had two sets of fore feet, each set being perfectly formed. It was neckless or without neck and its head was jammed down in its shoulders cross-wise. There were four ears, one on each side and one on the top of its head, protruding from its head as one ear, but about one inch from the head it divided into two parts. It had a hole one inch wide in the center of its forehead and two eyes both being up and down instead of side ways, located in the cavity of its forehead. It had a full set of upper teeth and its under teeth were as scarce as hen's teeth. Its upper lip hung down over its mouth like an elephant's trunk. Its mouth was about the size of one's finger and its tongue, if it had any at all, was undiscernable. To sum the whole up in a few words, it was an animal with eight perfect legs, one body, four ears, two eyes, one set of teeth, no tongue, two bushy tails and a snout resembling that of an elephant."

ARMY VETERINARY DEPARTMENT.

ENDORSEMENT OF THE ARMY VETERINARY BILL BY THE PROFESSION.

It is very gratifying to report that the appeal of the AMERICAN VETERINARY REVIEW in behalf of Senate bill 1692 has found prompt response. Naturally the army veterinarians interested are working hardest for the bill, but we are also in receipt of a number of copies of letters written to Representatives in Congress by our colleagues in civil life that speak with such energy and vigor as to be most refreshing. They breathe the tone of a stirring profession.

At this writing no direct hope can be entertained for the passage of the bill. No promises to that end have been made by anybody who can speak with authority. Perhaps it cannot be otherwise. But the bill has been shown up and is being agitated, and much depends now upon hanging constantly on its trail. Undoubtedly much more need to be done to have it acted upon, and we again ask our colleagues in civil life, who have not done so already, to muster all the influence they can upon members of the House of Representatives.

We may state that a few of our friends have overshot the mark in their enthusiasm, in telling their Representatives that this bill will put our army veterinary service on a footing second to none of any army in the world. We regret to say that such a bill or such a veterinary service is a long way off. The improvement of the service affected by the provisions of the present bill is, indeed, so slight that the enemies of the bill have all along maintained that it is not worth while to bother about it. However, the authorities have taken such a firm stand in squelching any attempt at anything better, that it became plain to be good sense to accept this offer, show better results of our work, and then ask for another improvement. An effective army veterinary will only be won by fighting for it inch by inch, and this for many years to come.

However this may be, let our friends in civil life be not disturbed by the littleness of the prize offered, but let them insist

that that much be given to us at the present. If successful, they can feel with us in the army that another step forward has been made, only one, and that we are ready to march on.

Please remember that we must yet work for this one step, and what can be done should be done at once.

O. S.

WASHINGTON, D. C., April 18, 1910.

Editors AMERICAN VETERINARY REVIEW:

The bill to reorganize the veterinary service of the United States Army will not become a law during this session of Congress. It is the policy of the House Military Committee to withhold any military legislation at this session. I cannot agree with Dr. Schwarzkopf's ideas, in the main, relative to the effect of this failure on future army veterinary legislation. Many members of the House Military Committee are in favor of the present bill, but for many reasons this bill, with many other meritorious measures, must await future action. Nor is the failure to get favorable action in the House due to any lack of labor on the part of the profession or of your committee. It is poor politics to waste efforts at the wrong time and to create antagonism among friends of the army veterinarian in Congress.

Sincerely Yours,

J. P. TURNER,
Chairman Legislative Committee A. V. M. A.

THE graduating exercises of the McKillip Veterinary College, Chicago, Ill., session 1909-10, took place in Handel Hall on the evening of March 31, at 8 p. m. The large auditorium was completely filled by a large and highly appreciative audience, friends of the graduates and others. After the invocation by the Rev. C. A. Kelley a select and attractive musical program was rendered. The address of the evening, which was both eloquent and inspiring, was delivered by Dr. Wm. A. Evans, Health Commissioner of the city of Chicago, after which President M. H. McKillip conferred degrees on ninety-three graduates.

CORRESPONDENCE.

WHAT IS TO BECOME OF THE VETERINARIAN IN THE PROJECTED UNITED STATES DEPART- MENT OF HEALTH?

CHICAGO, April 7, 1910.

To the Editors of the AMERICAN VETERINARY REVIEW :

GENTLEMEN—We of the veterinary profession are sleeping the thousand years sleep of Pharaoh. We are stone-busted Sphinxes and brown-paper mummies. And we will remain so, unless the breath of life gets into us, and, the spirit of modern progress stirring us, we shake off our stupor and stupidity. Are we to have identity as a profession, or are we willing to be lorded over by another profession? We claim most justly that, as a body of medical men, our science and its application demand strength of mind and a range of intelligence at least equal to that required in human medicine. The different professions having to do with medicine are sisters, if you please, but they are sisters of equal beauty and attractiveness. It will never do for men at work in human medicine to suppose that their labors are of so much more benefit to human health than those of workers in the veterinary profession, because this is only a half truth, proceeding from egotism, self-adulation and bumptious conceit. If the whole truth were considered it would be found that each profession has a large measure of service to render the people in general for the safeguarding of the public health. Both sides of the head, both forms of medical intelligence, are needed for this kind of public benefit :

“ Something I owe to the soil that grew—
More to the life that fed—
But most to Allah who gave me two
Separate sides of my head.

"I would go without shirts or shoes,
Friends, tobacco or bread,
Sooner than for an instant lose
Either side of my head."

Why, then, should one profession be subordinate to the other? Why should the prestige which the human medical profession has obtained only after the struggles of many scores of years and the organized power which it has formed in this country in the American Medical Association, be brought into play to make our profession a mere subaltern in the projected United States Department of Health? That is what would occur, apparently, if the Bureau of Animal Industry were transferred to the Department of Health, as planned in the bill now before Congress. The editorial, "A Department of Health," clipped from *The Journal of the American Medical Association*, which accompanies this letter, in defence of the formation of a Department of Health, rather than a Bureau of Health, says: "If health agencies that exist in other departments are to be transferred and made parts of an existing bureau, they must become subordinate divisions of that bureau. While such a proposition might be considered, it would naturally arouse a storm of protest from the bureaus themselves, as well as from the departments affected. The natural antagonism thus aroused would probably result in the defeat of the proposal." The same argument applies equally well to the proposal in the bill to transfer the Bureau of Animal Industry to the new Department of Health, for by that transfer a large body of men belonging to the lusty, youthful but fast-growing veterinary profession would be made subordinate to human medical men, which is as absurd as it is impractical and unintelligent.

But I have said enough to open up the question of the place of the veterinarian in the scheme proposed by the bill. As a result of my own thought and my conversations with prominent veterinarians, I could add very much more. My object in writing this letter is to point out the activity of the medical profession in the project, its organized power and potential energy being exercised through the American Medical Association and its organ, *The Journal of the American Medical Association*; the eye it has on available appropriations to be laid hold of for the purposes proposed. On the other hand, would that we would bestir ourselves and give this most important movement some

thought! We should do our thinking beforehand, if we are not to sulk afterwards with regrets. The political aspect of the bill does not affect me. I am first and last a veterinarian.

Below is the bill, as printed in *The Journal of the American Medical Association* (Vol. 54, No. 9, p. 725), and an editorial which appeared in the same paper March 10, 1910 (Vol. 54, No. 12, p. 972).

I. BILL TO ESTABLISH A DEPARTMENT OF PUBLIC HEALTH.*

The following bill, "Establishing a Department of Public Health, and for other purposes" (S. 6049), introduced into the United States Senate by Senator Owen, of Oklahoma, has been read twice and referred to the Committee on Public Health and National Quarantine.

This bill creates a separate department and provides for a Secretary of Public Health. While this is ideal and it is to be hoped that such a condition may be ultimately realized, the opposition to the enlargement of the Cabinet and to the creation of any new Cabinet officers may make it exceedingly difficult to pass such a bill. It is, however, most gratifying, as an evidence of the increasing public interest on this subject.

"Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

"Sec. 1. That there is hereby established a Department of Public Health, under the supervision of the Secretary of Public Health, who shall be appointed by the President a Cabinet officer, by and with the consent of the Senate, at a salary of \$12,000 a year, with like tenure of office of other Cabinet officers.

"Sec. 2. That all departments and bureaus belonging to any department, excepting the Department of War and the Department of the Navy, affecting the medical, surgical, biologic or sanitary service, or any questions relative thereto, shall be combined in one department, to be known as the Department of Public Health, particularly including therein the Bureau of Public Health and Marine Hospital Service, the medical officers of the Revenue Cutter Service, the medical referee, the assistant

* I am indebted to my dear friend and colleague, Dr. Joseph Hughes, President of the Chicago Veterinary College, who handed me copies of the articles from the *Journal of the American Medical Association* here reprinted.—D. A. H.

medical referee, the surgeons and examiners of the Pension Office, all physicians and medical officers in the service of the Indian Bureau or the Department of the Interior, at old soldiers' homes, at the Government Hospital for the Insane and the Freedman's Hospital and other hospitals of the United States, the Bureau of Entomology, the Bureau of Chemistry and of *Animal Industry* of the Department of Agriculture, the hospitals of the Immigration Bureau of the Department of Commerce and Labor, the emergency relief in the Government Printing Office, and *every other agency of the United States for the protection of the health of the people of the United States, or of, animal life*, be and are hereby transferred to the Department of Public Health, which shall hereafter exercise exclusive jurisdiction and supervision thereof.

"Sec. 3. That the official records, papers, furniture, fixtures, and all matters, all property of any kind or description pertaining to the business of any such bureau, office, department or branch of the public service is hereby transferred to the Department of Public Health.

"Sec. 4. That the Secretary of Public Health shall have supervision over the Department of Public Health, and shall be assisted by an Assistant Secretary of Public Health, to be appointed by the President, by and with the advice and consent of the Senate, at a salary of \$6,000 a year, with such duties as shall be prescribed by the Secretary not inconsistent with law.

"Sec. 5. That the Secretary of Public Health shall be authorized to appoint such subordinates as may be found necessary. There shall be a chief clerk appointed, at a salary not to exceed \$3,000 a year, and such other clerks as may from time to time be authorized by Congress.

"Sec. 6. That the officers and employees of the public service transferred to the Department of Public Health shall, subject to further action by Congress, receive the salaries and allowances now provided by law.

"Sec. 7. That it shall be the duty and province of such Department of Public Health to *supervise all matters within the control of the federal government relating to the public health and to diseases of animal life*.

"Sec. 8. That it shall gather data concerning such matters, impose and enforce quarantine regulations, establish chemical, biologic and other standards necessary to the efficient administration of said department and give due publicity to the same.

"Sec. 9. That the Secretary of Public Health shall establish a Bureau of Biology, a Bureau of Chemistry, a *Bureau of Veterinary Service*, a Bureau of Sanitary Engineering, reporting such proposed organizations to Congress for suitable legislation relative thereto.

"Sec. 10. That all unexpended appropriations and appropriations made for the ensuing year shall be available on and after July 1, 1910, for the Department of Public Health, *where such appropriations have been made to be used by any branch of the public service transferred by this act to the Department of Public Health*. It shall be the duty of the Secretary of Public Health to provide, on proper requisition, any medical, sanitary or other service needed of his department required in another department of the government.

"Sec. 11. *That any other department requiring medical, surgical, sanitary or other similar service shall apply to the Secretary of Public Health therefor wherever it is practicable.*

"Sec. 12. That all officers or employees of the government transferred by this act to the Department of Public Health will continue to discharge their present duties under the present organization until July 1, 1910, and after that time until otherwise directed by the Secretary of Public Health or under the operation of law.

"Sec. 13. That all laws or parts of laws in conflict with this act are hereby repealed."—*Journal of the American Medical Association*, Vol. 54, No. 9, p. 725.

II.—A DEPARTMENT OF HEALTH.

The introduction into the Senate by Mr. Owen of a bill proposing the establishment of a Department of Health, which we printed three weeks ago, and the correspondence between Senator Owen and Dr. Charles A. L. Reed, printed on another page of this issue, seem to indicate that a movement for a department, rather than a Bureau of Health, is taking shape in Congress; at least the cause has a staunch champion in the Senate. This is gratifying, since it is known that Senator Owen's bill was not prompted either by the American Medical Association or by the great lay movement represented by the Committee of One Hundred—the two organizations that have come to be recognized as the natural sponsors of all manifestoes in behalf of advanced health legislation. The measure is therefore

to be accepted as additional evidence of popular interest in a movement of deep and vital concern to the people.

Senator Owen comes squarely to the old issue of a department versus a bureau, and does so in language that leaves no doubt as to his attitude in favor of a department, with a Secretary in the Cabinet. His position is sustained by reasons that would seem sufficient. The importance and the dignity of the task of conserving human health as a means of preserving human life, efficiency and happiness are considerations which enter into his argument for a department. As Senator Owen recognizes in his letter, we already have a Bureau of Public Health. The proposal to create another would be in a sense to propose a duplication of governmental machinery. If health agencies that exist in other departments are to be transferred and made parts of an existing bureau, they must become subordinate divisions of that bureau. While such a proposition might be considered, it would naturally arouse a storm of protest from the bureaus themselves, as well as from the departments affected. The natural antagonism thus aroused would probably result in the defeat of the proposal. What is needed is to increase and not to lessen the prestige, influence, power and efficiency of every bureau, division, institution or agency that has to do with the conservation of health.

That this can be more satisfactorily done by a department seems evident from Dr. Reed's summary of reasons for the creation of a department—namely, that sanitary science has demonstrated its efficiency and that the people are in need of its benefits; that a Bureau of Health now exists, and that the established precedent demands its advancement to a department. While no bill has yet been introduced in the House, the Committee on Interstate and Foreign Commerce can take up the question, following the suggestions contained in the President's message regarding advanced health legislation. *The Committee on Medical Legislation of the American Medical Association has already applied to Mr. Mann, Chairman of the House Committee, for a hearing on the general question, as well as on specific points enumerated in Dr. Reed's letters to Senator Owen and Mr. Mann.*

Mr. Mann's championship of the Pure Food and Drugs act and his identification with other progressive public health legislation lead to the hope that he will be equally zealous in the behalf of the department idea. There is a growing demand on

the part of the press, both lay and professional, for greater activity on the part of the national government in the conservation of the public health. It is also known that many senators and representatives are already favorably inclined to the idea of a department. It seems, therefore, that *the time is opportune for every citizen interested in the welfare of the people not only to echo but also to act in accordance with the sentiment of Senator Owen*, when he says: "I believe in conservation, and first of all in the conservation of human life."—*Journal of the American Medical Association*, March 10, 1910 (Vol. 54, No. 12, p. 972).

The italics are my own. The bill may be defeated—indeed, *The Journal of the American Medical Association* predicts its defeat. Ultimately no doubt there will be a United States Department of Public Health, with a Cabinet officer at its head. While things are at a flux, in this the formative period and period of readjustment of government machinery for the conservation of the public health, it is obligatory upon us as professional men to make the situation the food for thought and action. As a separate profession I am of the opinion we would not care to stomach having to pay fealty to overlords at the head of a department belonging to another profession perhaps not altogether sympathizing with us. We are bound to have a large share of sanitary work for the conservation of the public health to do—that is our destiny. The magnificent federal meat inspection service is ours by origination and development. The question is, Would this and all other agencies of the Bureau of Animal Industry erected in the interests of the public health be made more serviceable, more efficient, be given more prestige and power, either at present or by evolutionary processes in the future, by its combination with the proposed Department of Public Health? Would the veterinarian and his profession be strengthened? Would this sanitary work be more appreciated and his power advanced, or would it be smothered by the new suzerainty? We are keenly alive to advancement of the public welfare as far as our profession is concerned with sanitary measures at present operative or as they should be brought into operation with the process of time. Are we to be losers or gainers by the project contemplated? There is the rub, there is the debatable question.

D. ARTHUR HUGHES, Litt. M., Ph. D., D. V. M.

OAKLAND, California, March, 1910.

Editors of the AMERICAN VETERINARY REVIEW:

The local Committee of Arrangements, with your kind permission, desires to issue a warning to those who contemplate attending the next meeting of the American Veterinary Medical Association in San Francisco regarding the necessity of making hotel reservations at an early date. This necessity is due to the fact that the Native Sons of the Golden West celebrate the annual anniversary of the admission of California as a full-fledged State of the Union in San Francisco the same week as our meeting takes place. The significance of this fact is that San Francisco will have at least seventy-five thousand visitors, the majority of whom will be native sons and daughters, who make this gala occasion one to be remembered long after the Oslerization period has been reached and passed. One has to see in order to fully appreciate the enormous enthusiasm displayed by the native born during these annual gatherings.

As these celebrations are held in San Francisco once every ten years, and this is the first opportunity to observe the occasion in that city since the fire of 1906, extra and extraordinary efforts are being made for its success. In fact, the local Committee of Arrangements believes that the opportunity to witness this fete will be one of the most pleasurable incidents of the trip.

We consider that in viewing the doings and the people assembled in San Francisco upon Admission Day our eastern confreres will experience the shock of their lives, as far as their early teachings are concerned. False impressions undoubtedly still exist regarding the character of our native born sons and daughters. Pictorial atlases and other ichthyologic literature along these lines have variously depicted the California native son as a metallic-hued individual who promenades around with nothing to conceal his person from the modest observer other than a modified Chantecler headpiece and a chronic sunburn contracted from constant exposure to the daily effects of our western sun.

He has also been portrayed as an indolent piece of humanity clothed in a raiment second only to Joseph's Coat of Biblical fame in the matter of color, whose sole and most exhilarating occupation in life seems to consist in rolling cigarettes and relieving his weariness by leaning against a patient and more intelligent

looking burro while watching a native daughter resting upon her inferior extremities nearby engaged in pulverizing a handful of grain in a utensil simulating a mortar, the same to be incorporated later on in the construction of a tamale, enchilada or other caliente food preparation of Mexican fame. But a glance at our native sons and daughters, September 9, will dispel all such false illusions and demonstrate that these specimens of mankind constitute the people and their offspring who have made the West what it represents to-day. People who show every symptom of an active, energetic, healthy, well-spent life and who from their conformation and personality would naturally be expected to do things. In fact, we hereby agree and covenant to demonstrate to all who are inclined to be incredulous that the natives of the Golden West, more especially of California, are far from being zeros with the rims torn off.

But what he started out to explain, Messrs. Editors, was that, in view of the great number of visitors in San Francisco during the week of our meeting, it behooves those who propose attending said meeting to make reservations at an early date.

The Committee of Local Arrangements, realizing the vital importance of making early reservations, beg leave to submit to your readers the following schedule as to headquarters, hotel rates, etc.:

HEADQUARTERS AND HOTEL ARRANGEMENTS.

The headquarters of the Association will be at the Palace Hotel, corner of Market and New Montgomery streets. This hotel is in the centre of the business district of the city, within a few minutes' ride or walk of all railroad and ferry depots.

The Palace Hotel offers the following rates:

Rooms for one person, with bath, \$2.50 per day; for two persons, with bath, \$4 per day; European plan.

The Hotel St. Frances, corner Geary and Powell streets, offers the following rates:

Rooms for one person, without bath, \$2 per day; with bath, \$2.50 per day. For two persons, without bath, \$3.50 per day; with bath, \$4 per day. Rooms with two beds and bath, \$6 per day. European plan.

Hotel Stewart, Geary street, near Powell street, offers the following rates:

Rooms for one person, without bath, \$1.50 per day; with bath, \$2 per day. Rooms for two persons, without bath, \$3 per day; with bath, \$3.50 per day. European plan.

Grand Hotel, on Taylor street, near Market street, offers the following rates:

Rooms for one person, with detached bath, \$1 to \$1.50 per day; rooms with private bath, one person, \$1.50 to \$2 per day. Two persons, without bath, \$1.50 to \$2 per day; with bath, \$2 to \$2.50 per day. European plan.

Grand Central Hotel, corner of Market and Tenth streets, offers the following rates:

Rooms, one person, without bath, \$1 per day; with bath, \$1.50 per day. Two persons, without bath, \$1.50 per day; with bath, \$2 per day. Two connecting rooms, with bath for two or three persons, \$2.50 per day; European plan.

Hotel Argonaut, Fourth street, near Market street, offers the following rates:

Rooms with detached bath, \$1 per day; rooms with private bath, \$1.50 and up per day; European plan.

There are many hotels located within a block or two of the headquarters.

Those wishing to reserve rooms may communicate with R. A. Archibald, chairman of the Committee of Local Arrangements, No. 1724 Webster street, Oakland, California, stating the kind of rooms they desire, or for any other information along these lines.

PLACE OF MEETING.

The meeting will open at 10 A. M., Tuesday, September 6, and the sessions will be held in the ballroom of the Palace Hotel, which is located on the ground floor, on the Jessie street side.

The Committee of Local Arrangements also beg leave to report that, through the indefatigable energy of Dr. S. B. Nelson, arrangements are being made to have a special train leave Chicago, the itinerary of which will, your good nature permitting, be submitted to your readers in the near future.

Respectfully,

R. A. ARCHIBALD,
Chairman Entertainment Committee.

LIVINGSTON, MONT., April 8, 1910.

Editors AMERICAN VETERINARY REVIEW, New York City:

If the Veterinarians making the trip from Chicago to San Francisco in September can be induced to go by way of the Northern Pacific and take in the trip through the Yellowstone National Park it will be a very pleasant and profitable side trip. The Park being located midway between the two terminals of the Northern Pacific it will be a convenient rest in the journey.

Yours truly,

A. D. KNOWLES.

KANSAS CITY, Mo., April 11, 1910.

To the AMERICAN VETERINARY REVIEW:

In the March number of the REVIEW there was published a prospective outline programme for the annual meeting of the American Veterinary Medical Association. At that time readers were urged to contribute toward the literary entertainment of the convention. No one has as yet responded. Within the same issue was an open letter from Dr. W. Horace Hoskins, suggesting the feasibility of Eastern and Middle States and provincial veterinarians and their friends assembling at a common centre to travel as a unit to San Francisco. This latter idea has been occupying our attention for a considerable time and we are now prepared to offer a proposition for an excursion from Chicago to San Francisco, leaving to the REVIEW readers and members of the A. V. M. A. to determine if these issues can be successfully worked out.

An excursion can be arranged for those contemplating attendance at the forty-seventh annual convention, thus: Leaving Chicago, Thursday, September 1, at 6 p. m., in special cars (a special train, should one hundred or more signify a determination to join the party), travelling over any direct line to Omaha, thence via Union and Southern Pacific lines, through Cheyenne, Ogden, Sacramento, and arriving at San Francisco Sunday, September 4, 7.28 p. m.; or, again, leaving Chicago, Thursday, September 1, 9 p. m., over the Rock Island and South-

ern Pacific lines (Golden State Limited), via Kansas City, El Paso, Los Angeles, and reaching San Francisco Monday, September 5, 11.40 a. m. The cost of either of the routes mentioned will be the same, viz. : Round trip fare, returning as individuals or in a body, by way of any direct route, prior to October 31, \$62.50; returning by way of a northern route, round trip, \$77.50. Pullman reservation is \$14 in either direction on the so-called direct routes.

Other ways that might be available under ordinary circumstances are prohibited in this instance because, firstly, tickets do not go on sale for this convention rate prior to September 1, and, likewise, because a greater time is consumed in transit, thus making the arrival at San Francisco too late for those wishing to attend committee meetings or the meeting of the Association of College Faculties and Examining Boards now planned for Monday afternoon, September 5.

This trip will enable those finding it possible to attend the great convention of veterinarians from Canada and the United States to pass through a portion of this country marvellously rich in natural resources; will be highly educational and will offer the one chance of a lifetime, at greatly reduced prices, to visit the renowned Golden Gate City on the shores of the Pacific.

Now then, readers, it is up to you. It is suggested that in order to make this excursion possible you immediately determine that you and your family will attend the convention; correspond at once with this office, stating your plans, signifying which route you prefer and agreeing to abide by a majority choice (you can return as you elect). I will then make definite arrangements with the lines selected, will advertise the plans sufficiently early to insure a clear understanding and a successful accomplishment of our purposes. You do not buy your ticket now, but simply give me a definiteness for my future actions. To start the bidding, if it has any attractiveness, the undersigned will engage to occupy at least one reservation out of Chicago. Who bids next?

If not having already transgressed too extensively upon your valuable space I will briefly enumerate, if permitted, the associations that have thus far appointed delegates. At a later date I hope to publish a full list of those officially selected to represent their local associations at the American Veterinary Convention. Thus far we have heard from the Minnesota State Veterinary Medical Association, Missouri Valley Veterinary

Medical Association, Ontario Veterinary Association, Manitoba Veterinary Association, California State Veterinary Medical Association, Society of Veterinary Graduates of Wisconsin, North Dakota Veterinary Association, New York State Veterinary Medical Society, Schuylkill Valley Veterinary Medical Association, Georgia State Veterinary Association, Colorado State Veterinary Association, Bureau of Animal Industry, Veterinary Inspectors' Association of Chicago, and Maine Veterinary Medical Association.

RICHARD P. LYMAN,
Secretary, A. V. M. A.

KANSAS CITY, Mo., April 14, 1910.

To the AMERICAN VETERINARY REVIEW:

POST SCRIPT TO MY FORMER LETTER.—Since mailing the above letter, the Passenger Associations have reconsidered their earlier ruling and conceded to place A. V. M. A. convention tickets on sale for a special train leaving Chicago August 31st, and going via Burlington route to Minneapolis, then to Billings, Seattle, and over Southern Pacific to San Francisco, reaching there the morning of September 5th. This special will require sale of one hundred tickets out of Chicago and may be one of the routes considered in making your selection. Round trip, \$77.50; Pullman, \$19.00 each way.

Yours very truly,

RICHARD P. LYMAN.

Editors AMERICAN VETERINARY REVIEW:

The Northwestern Ohio Veterinary Medical Association at their meeting February 15th, at Findlay, Ohio, unanimously elected Dr. R. C. Longfellow, of the Toledo Clinical Laboratory, Toledo, Ohio, clinical bacteriologist and pathologist to the association.

In so doing the association has secured the services of a well-known laboratory worker, whose services have been well recognized by the medical profession of northwestern Ohio and southern Michigan.

Dr. Longfellow has for the past eight months prepared auto-genous vaccines for pus cases for our members, whose success with these biologic products have been most excellent. Poll-evil, fistula, quitters, any pus formations are now successfully and quickly healed by the bacterins made from the animal's own strain of causative bacteria.

We are glad to have a recognized laboratory worker, who is interested in our work, meet with us; can give any aid along the lines of laboratory pathology, microscopy, bacteriology, tissue specimens, and the many needs of the progressive veterinarians.

The Northwestern Ohio Veterinary Medical Association is one of the most progressive associations, its members actively pushing along research and biologic medicine hand in hand with our medical brothers, and our influence in public welfare is being recognized as never before.

A. J. KLINE, Secretary.

THE Delta Sigma Beta Fraternity at the United States College of Veterinary Surgeons, Washington, D. C., held its fifth annual banquet at "Raucher's" in that city on February 24th last on the sixteenth anniversary of the founding of the college. Among the guests of the fraternity were Dr. Harvey W. Wiley, Chief of the Bureau of Chemistry; Dr. William C. Woodward, chief health officer of the District of Columbia; Dr. J. J. Kinyoun, bacteriologist for the District of Columbia; Dr. Noble P. Barnes, professor of Materia Medica and Therapeutics at George Washington University; Prof. George A. Prevost, treasurer and attorney of the United States College of Veterinary Surgeons, and Dr. C. Barnwell Robinson, the dean of the college and professor of surgery and practice of medicine. L. B. Morris, exalted ruler of the Fraternity, was the toastmaster for the occasion. The members in attendance were Dr. M. Page Smith, Dr. C. C. Weeks, Dr. H. S. Gamble, Dr. Robert C. Talty, Dr. C. H. Bowker, L. B. Morris, exalted ruler; Edward C. W. Schubel, scribe and treasurer; C. Galiher, C. L. Hall, B. B. Flowe, C. D. Ashmore, C. L. West, H. H. Ladson, F. C. Herndon, C. A. Freyman, Wm. Moore, J. T. Shaw, J. R. Stifler, T. L. Casserly, O. W. Schubel, C. B. Simmons, T. L. Hamilton, T. H. Hungerford, H. R. Kelsey, R. B. Miller, J. A. Turlington, and J. J. Garvey.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

FRACTURES OF THE HUMERUS IN CATTLE [*Sidney Willar*].—Under this title the writer relates his experience with four cases of fracture of the humerus. The first on a sixteen months' old heifer which he advised first to be destroyed. But being warmly requested by the owner, six days later, to go and do the best he could for her, he found her so much improved, with less swelling, getting up and laying down without much difficulty that he "applied an adhesive plaster which was repeated after a few weeks." Recovery was perfect, leaving no external indication of the accident. A second case in which the fracture was easily perceptible, was treated in a similar manner with excellent results. A third animal, young Devon steer, had a similar condition and treatment, but the result was not so good; he was fattened and sold. Unfortunately the author does not say if the post mortem confirmed the diagnosis. In a fourth case, however, this was done. The animal was not treated. On inquiring what might be the cause of these fractures, the writer was brought to the conclusion that it was due to the fact that often young animals would "ride" each other when some among them are in oestrus, and being thrown or falling down would injure themselves.—(*Veter. Record*.)

TWO CASES OF FRACTURED CERVICAL VERTEBRAE IN HORSES [*R. Tindle, Lieut., A. V. C.*].—Both were the results of falling over fences on hard ground when the animals were moving at a comparatively slow gait. In neither was any pathological change found in the skeleton. The first animal was an aged horse which made a misstep in jumping a three feet high fence; he

fell on the head, which, acting as a pivot, made the horse turn completely over. There was no swelling or any external sign of a fracture and yet on post mortem it was found that the body of the third cervical vertebra had been broken into five pieces. The second animal met with a similar accident, falling dead on his side. On the left side and at the lower third of the neck, there was a swelling as large as an orange, and on dissecting the region there was found an oblique fracture of the fifth cervical vertebra in which the posterior part of the bone was crushed into eight pieces.—(*Veter. Record.*)

A CASE OF THROMBOSIS OF THE EXTERNAL ILIAC ARTERY [*J. Campbell, M. R. C. V. S.*].—The record of the case which manifested itself in the usual way and had in his history shown that in its present owner's possession for about a year, he had manifested no lameness nor any trouble, except that lately he had been taken with three attacks of colic. In this case the author points out that by making a rectal examination of the circulation per rectum, before the horse was taken out of the stable, he was very fortunate, as it assisted him to make the diagnosis of thrombosis.—(*Veter. News.*)

ASCITIS IN DOG [*H. A. Woodruff*].—Great Dane bitch had large swelling of the abdomen. Appetite is good, animal is somewhat constipated. Paracentesis is performed and 85 oz. of dark bloodstained fluid are removed. Treatment: sulphate of magnesia, nitrate of potash, extract of digitalis and purge. Four days later, the animal is bad again. She is tapped and relieved of one and a half gallons of fluid. Some is left in. The same treatment is continued. Within three days the remaining fluid began to be absorbed, the swelling of the abdomen gradually diminished and disappeared and in three weeks after the second tapping the bitch was quite well. The writer thinks that the treatment followed in this case, tapping once or twice, stimulating excretion of the kidneys and bowels with strengthening the heart will often do well.—(*Veter. News.*)

FRACTURES IN CATTLE [*W. Waters, M. R. C. V. S.*].—As these accidents in young cattle usually seem to unite readily, leaving the animal free from lameness and without deformity, would it not be worth while to attempt treatment not only with

these animals, but also with foals, colts, and especially the fillies with pedigrees. These remarks are advanced by the writer after relating two cases treated successfully. First case: Two-year-old steer had a comminutive fracture of the near metacarpal. Two splints and long adhesive plaster are put on. In three weeks the animal puts weight on his leg; after six weeks he is free from lameness; only enlargement of the bone remains. Second case: Yearling bullock has a fracture of the off tibia just above the hock. Splints and bandages cannot be applied tight enough and to support them and strengthen the dressing a leather legging was applied over the hock and tibia. In five weeks the fracture was set perfectly, the bull was free from lameness and had no appreciable deformity of the leg.—(*Veter. Record.*)

STRONGYLUS ARMATUS [*T. G. Heatley, M. R. C. V. S.*].—The author has often noticed in foetal cases of colics arising from aneurism of the mesenteric artery caused by the *strongylus armatus*, that the rectal temperature was very high. So constantly so that he considers this as of great help and value in making out a diagnosis in cases of abdominal pains. The following is an illustration: A yearling colt which died after twelve hours of acute abdominal suffering had a rectal temperature one hour before death registering 108.8° F. The highest ever recorded in horses. At the post mortem the aneurism was found to be the size of a cocoanut. Large number of worms was present in the softened debris filling it. The double colon was completely covered with blood spots from the size of a pea downward. A similar spotted condition existed under the skin over the region of the loins and each side of the neck.—(*Ibidem.*)

FIBRO-LIPOMA ON THE FORE-ARM OF A COW [*Prof. D. Dey, G. B. V. C.*].—(*Bengal Vete. Coll.*)—Cow had a tumor on the left fore-arm with a discharging fistula. It began two years ago as a very small, wart-like growth, and now it is enormous. Cow is good milker but much emaciated on account of the bother and pain caused by the growth. Anesthesia and antiseptic precautions were first applied, tourniquet was placed on the leg and the whole of the tumor, which was lying between the flexors and extensors of the knee and foot, was dissected away through an elliptical incision made at its base. The wound was sutured

and boric acid dressing put on. With only a little fever the next day, the recovery offered nothing noticeable and took place by first intention. The animal improved rapidly in condition. The tumor, which was a fibro-lipoma, weighed nine and a half pounds.—(*Veter. Journ.*)

MAMMARY ABSCESS IN A COW [*By the same.*].—This animal had a large mammary tumour, hard and tense. It began a month before and grew larger. It consisted in a large abscess involving the two quarters of the right side. After disinfection, the whole diseased portion of the udder was removed, the wound cleaned, sutured, and boric acid with suspensory bandage applied. Creolin solution was freely used for cleaning the wound, which discharged quite freely. However, the cicatrization went on well and in two months and a half the animal was discharged. The tumour removed weighed sixteen and a half pounds.—(*Ibidem.*)

AMPUTATIONS [*By the same.*].—The first is on a ram which had a compound comminuted fracture of the right hind leg by having been run over. The amputation was made and the wound healed by first intention, allowing the removal of the sutures on the tenth day. The second case was in a young deer. He had a compound comminuted fracture of the right hind leg at the middle third of the metarsus. Recovery here took place in three weeks.—(*Ibidem.*)

LAPARO-HYSTEROTOMY IN A COW [*By the same.*].—Minute record of a Cæsarian operation with successful results.

MONSTROSITY IN A HEIFER [*Ainsworth Wilson, F. R. C. V. S.*].—Relation of a case which was found after bleeding the mother to death: viz., a monster presenting the form of a schistosoma and resembling the *Schistocormus Reflexus* of Dr. Bruin's obstetrics.

SOME NOTES FROM PRACTICE [*G. Nayall, M. R. C. V. S.*].—Such as *Eversion* of the rectum in a sow; *Curious sequela of strangles*, viz., abscess round the ocular globe; *Pneumonia* following fistula of the withers, in which death occurred by complications of pneumonia and pleurisy; *Luxation of the eye ball*, re-

duced; *Extensive accidents, wounds; Recurrent eversion* of the uterus in a bitch.—(*Ibidem.*)

CURIOUS CASE IN A DOG [*J. F. Crag.*].—Cocker spaniel bitch had been ill since two or three weeks and was noticed ailing for the first time when coming out of the water. The attack came at intervals and lasted for days, when she was unable to remain still, would paddle with fore limbs and arch the back. Face and eyes were most anxious. She seemed most at ease when lying with the forelegs stretched out. She would suddenly cry out when walking or turning or going up or down stairs. The cry was most piercing, plaintive and prolonged, ending in a wail, and was repeated in quick succession. Temperature 102.6° F. No vomiting. She was treated for foreign body in the bowels or constipation, and also for rheumatism, with only temporary relief. As she was suffering with otorrhea, this was also attended to, and for a short while she seemed to be free from her trouble. Then she was given a bowlful of bread and milk, which she ate greedily. She then had pains and received bromides. After that she was put under an entirely liquid diet—milk, soup and tea. This was continued for a month. She remained in perfect health all along and has remained since. Was the trouble a foreign body in the alimentary tract or what?—(*Veter. News.*)

FRACTURE OF THE FIRST AND SECOND LUMBAR VERTEBRAE [*D. R. Chatterley*].—Failing to clear a ditch a four-year-old horse fell with his hind legs in the ditch. Having recovered after a short time he is walked partly home and shortly before arriving a lad is put on his back. Put in his stall, he is groomed and rubbed down. He then drops and is unable to regain his feet. Pulse and temperature are normal. Respiration is hurried. Sensation in hind legs absent. Rectal examination is negative. Anus slightly dilated, dock strong, no sweating. On the third day the horse gets very weak and is destroyed. Fractures of the first and second lumbar vertebrae are found. The displaced bones are pressing on the spinal cord. Probably the first condition of the fracture was without displacement. Did the weight of the lad increase it or did it cause extra muscular effort which separated the bones? Or was it simply the result of the moving about of the horse in his stall or in his lying down?—(*Veter. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

KNUCKLING IN COLTS—TENOTOMY OF THE PERFORANS TENDON [*Mr. Ch. Darmagnac, Army Veter.*].—If tenotomy of the perforans is generally serious in adults, it seems as if in colts it is deserving to be put more in practice. Four Arabian colts, between two and a half and four months old, all from the same stallion, have knuckling at the fetlock of the same leg, the right fore. They presented the same condition; the leg resting exclusively on the toe, the heels much raised, and although they were not lame, their actions were defectuous and irregular. These symptoms grew worse, and notwithstanding treatment, in three weeks the knuckling was such that the leg was resting with the anterior face of the foot on the ground, and the foot was such by the growth of the heels that it looked like a club foot. All treatment having failed, orthopedic apparatuses have given no results or could not be applied, tenotomy of the perforans is decided and performed with tenotomy knives with fine and very sharp blades. The little fellows had a shoe put on having long heels with little calks to them. A wadding dressing was applied, slightly tight, from the shoe up to above the knee. The results were excellent. Two of the operated colts having died several months after, the dissection of the legs show a perfect cicatrization of the divided tendons.—(*Rec. de Médec Vétér.*)

DROPSY OF THE ALLANTOID NOT DIAGNOSED IN A COW [*Mr. Th. Monod, Army Veter.*].—A week before her time, a pregnant cow, which has had a normal gestation, has eaten good all the time and been in perfect health all the while, suddenly refuses all solid food, no matter what is offered to her or what tonic medicine is administered. Carefully examined, nothing abnormal is detected. Her udder, however, which was beginning to enlarge, is arrested in its development. The calf is easily felt in the flank, and through vaginal exploration he is felt well and alive. After two or three days the abdomen has dropped and the cow began to lose flesh. At another vaginal examination the calf seems

weaker. It is decided to extract it. At the rupture of the chorion and allantoid, some 25 litres of allantoid fluid escaped, followed by 10 more as the amnios is lacerated. After some difficulty the calf is extracted alive, but he soon dies. As it was taken off the allantoid of each uterine horn was emptied of 20 or 25 litres of serous limpid fluid, making that altogether the envelopes contained between 75 and 80 litres of fluid. The dropsy of the allantoid gives the explanation of the trouble. The record is instructive for those that may meet similar conditions.—(*Recue de Méd. Vétér.*)

COLICS AND LYMPHANGITIS OF INTERNAL ORIGIN [*Mr. Perrin, Late Army Veter.*].—If lymphangitis of the extremities are not rare, the causes that give rise to them are often obscure. When one takes into consideration that splanchnic cavities and their organs are abundantly provided with lymphatics and that these are connected with the glands and vessels of the extremities, it is easily understood that some alterations of abdominal organs or simple functional disturbances may be accompanied with lymphangitis. One morning a horse is noticed uneasy, laying down and getting up; he scrapes the floor and soon has marked colic and tympanitis. These are not severe, yet the conjunctiva are very red, pulse slow and irregular, strong and quick, respiration accelerated. In fact he presents a general condition not in proportion with the colic. Preparations are about to be made to puncture the coecum and give him eserine and pilolarpine when the animal has an abundant diarrheic evacuation and is apparently relieved and he is taken back to his stall, presenting only a little stiffness on his hind legs. Two hours after, the right hind leg is found very sore and painful to the touch, it is swollen in its upper part, there is an acute attack of lymphangitis with the inner face of the thigh hot and very painful. It soon localizes itself to the hock. The treatment consisted of blistering and resolute frictions. The animal returned to work after 10 days. The writer has already had occasion to observe similar conditions in other cases and for him the manifestations of lymphangitis were due to microbian origin having taken place in the abdomen.—(*Reperto. de Poli. Sanit. Vétér.*)

HYPERTROPHIC CIRRHOSIS OF THE LIVER—BILIARY LITHIASIS [*Mr. E. Houdemer, Army Veter.*].—A mare nine years of

age has colic with brain manifestations. She has dull pains, no borborygms, no defecation, no tympanitis. She pushes her head against the wall of her stall, grinds her teeth and her lips are agitated with convulsive movements. A diagnosis of abdominal vertigo is made and the animal treated accordingly. Bleeding, cold applications to the head, pilocarpine, ammoniacal drenches, glycerine enemas, purgatives, puncture of coecum, etc., etc. No relief was given and after 10 days the mare died. After removal of the intestinal mass, the liver was exposed, attached to the duodenum by the choledoc canal, which is as large as the small intestine. In it there is felt a round, hard body as big as the fist, which is an enormous biliary calculus, greenish in color and weighing 230 grammes. The liver is hypertrophied, cirrhotic and weighing 15 kilograms. The divisions of the choledoc are dilated and packed with numerous concretions of various sizes and forms, some being as large as pigeon's eggs. They were made of concentric layers of biliary salts. After pointing out the conditions which might have helped in making a correct diagnosis and regretting that they were overlooked the author concludes: If the correct diagnosis had not served to save the animal at any rate it would have been more satisfactory to the attending practitioner. —(*Rev. Génér. de Méde. Vétér.*)

COLLOIDAL SILVER IN CANINE MEDICINE—TREATMENT OF ECZEMA AND DISEASES OF YOUTH [*Mr. E. Pignet*].—After a few remarks on the history and therapeutic properties of collargol the writer described the manner he uses it. He resorts to a solution of 1 per cent., which he injects sub-cutaneously or by intramuscular-way, for small animals. The external saphena vein is the one he prefers, or again the muscles of the thigh. The doses are between 2 and 5 C.C. of the solution, according to the size of the animal. Sometimes he makes an ointment which he applies to the skin.

For eczema, generally one injection is necessary, to obtain a radical recovery. In very few cases he had to give two and even three. In those cases the injections are made two days apart. Sometimes with the injection he applies externally compresses of the solution after washing the eczematous sores with boiled or boric water. In some instances instead of the compresses, he uses the ointment. No other internal or external treatment is required. In cases where the disease reappears again, the

treatment has to be followed again in the same way, the result will be the same.

Mr. Pignet has obtained excellent results with collargol in the treatment not only of eczema but also of auricular catarrh and of auricular chancre. Recovery has been the general rule, although several injections have had to be made in some few cases. The writer gives the records of a number of cases of those diseases and also of suppurating localizations among dogs and horses where he has obtained some wonderful results in short time; most ordinarily inside of 10 days.—(*Rec. de Medec. Veter.*)

TRAUMATIC SUB-CUTANEOUS EMPHYSEMA IN A HORSE [*Mr. Plateau, Army Veter.*].—A horse received a kick on the inferior border of the neck. A swelling is formed. It is a contused wound, having the semi-circular form of the toe of a horse-shoe. Hairs and epidermis are off but the dermis is sound. The sub-cutaneous emphysema exists round the bruise only, but it soon spreads, reaches the throat, the lateral faces of the neck and the chest. Exploration of the trachea does not reveal any rupture of the tracheal rings. The swelling, however, gets larger, and although there is no fever and the horse seems but little affected with it, it has extended to the upper border of the neck, to the mane, goes beyond the posterior border of the shoulder and covers the point of the scapulo-humeral angle. Downwards it is limited by the inside of the forearm and upwards nearly to the masseters. Taking into consideration the condition of the animal, the danger of infection, etc., etc., it is decided to throw him and to cut down on the trachea and see what there is. An incision 15 centimeters long is made on the median line, along the inferior border of the neck, it allows the escape of a large quantity of air to pass out, and as the trachea is exposed, a small laceration is discovered between one ring and the ligament above it, and through which the air was passing from the trachea into the sub-cutaneous tissue. By careful massage a large quantity of air was made to escape through the cutaneous incision and a pulverized dressing of boric acid applied. From this moment the animal began to improve, the air made its exit outside and the emphysema gradually subsided.

The writer thinks it always advisable to operate early rather than to wait and run chances and risks, as one becomes at once

assured of the condition of the injury and besides guards against the possibility of suppuration, septic or gangrenous complications.—(*Rec. de Medec. Veter.*)

THREE CASES OF SURGERY ON BONES [*Mr. Redeu, Army Veter.*].—1. Horse received a kick on the inside of the radius, one hand breadth from the knee. Blister is applied, large swelling is formed, but as the horse is not lame, after three weeks he is returned to work. Soon, however, lameness becomes manifest. The swelling has become suppurating and there is a fistulous tract on its center. The horse was cast and after removing a piece of skin with the opening of the fistula in its center, the radius is exposed and found having two fistulas running in the medullary cavity. The radius is gouged out to make the two fistulas meet in one single groove, the necrosed structures are removed and the bony cavity which was left was filled with dressing of gauze. Suppuration was very abundant but the wound soon began to throw out healthy granulations, new bone was formed and cicatrization went on completed by the entire absorption of the induration on the radius.

2. A mare got kicked on the inside of the left hock, a little above the tibial tuberosity. She is very lame and suppuration is running freely. Probing reveals loose pieces of bone. The animal is thrown, incision of the skin exposes the tibia with two small pieces of necrosed bone. These are removed. There is also a spot which is undergoing necrosis but is still adherent to the body of the tibia. It is scraped off. The periosteum was carefully saved. Dressing with tincture of iodine. Complete recovery in one month.

3. A mare has, resulting from repeated blows and bruises, a fibrous induration of the right hind cannon bone. There is a fistula which runs down to the bone. With the animal down, an incision of the skin exposes the tract of the fistula to between the extensor tendon and the principal metatarsal. Surrounding connective tissue is necrotic and surrounded with reddish necrotic suppuration. The anterior face of the bone is scraped off, the necrosed tissues are removed and after compressive dressing with tincture of iodine and peroxide of hydrogen water the animal is left to rise. The wound was dressed often as the suppuration was abundant. There was no trouble in the cicatrization.—(*Rec. de Medec. Veter.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

RARE LOCALIZATION OF ACTINOMYCOSIS IN A COW [*Dr. Ruggero Fracaro*].—A cow, aged eight years, had a tumor on the superior lip. It had the shape and size of a turkey's egg. In feeling it, it seemed to involve the entire thickness of the lip. Full of nodules, it was hard and slightly painful. Externally the skin was adherent to it and had an ulceration in one spot which was covered with a dry scab. On the inside of the lip, the mucous membrane was covered with numerous little nodules. During the removal of the principal growth, more of these nodules were exposed in the center of the mass and in the meshes of the tissues involved a center of softened caseous substance with yellow tufts was exposed in which by microscopic examination the tufts of actinomycosis were plainly made out and confirmed the diagnosis which had been made.—(*Clinica Veterinaria*.)

EXORBITAL PROLAPSUS OF THE LACRIMAL GLAND [*Same Author*].—This anomaly has not yet been described in veterinary works, says the author.

Since one month, a two-year-old heifer which has always been in good health, has upon the anterior face of the superior half of the ocular globes, under the palpebral border, a soft vesicular growth, which seems to hang from the conjunctiva and has the aspect of a hernia, elongated in the same direction as the ciliary opening. Rather fusiform, varying in size and being at times quite big and again small, it has a smooth surface and is of normal rosy color. This hernia seems to be bigger near the temporal angle and diminishes as it reaches towards the nasal. When the animal's head is left free, the protruding mass varies in size and form, and when the animal looks with eyes fixed, the lids open and the head elevated, the morbid condition is then more manifest. Then feeling it delicately, it is found of softish consistency, elastic and formed of granular tissue which can by pressure be returned under the eyelid and the orbital arch. The case was evidently one of prolapsus of the lacrimal gland. The author considers the various causes which might give rise to such accidents

and believes that in this case it was due to the deficiency and relaxation of the periglandular connective tissue attaching and supporting the gland on the superior part of the ocular globe and to the orbital arch.—(*Ibidem.*)

PNEUMECTOMY IN A DOG [*Doct. F. Quadrelli*].—In the space between the seventh and eighth ribs of the left side of the chest a dog received a punctured wound with a sharp knife. The wound measured seven centimeters and through it parts of the left lung is protruding. Four days later, the ectopied lung, soiled with the straw from the bedding, is in process of gangrene and the animal has a temperature of 41.3° C. In this condition it is useless to return the lungs into the thoracic cavity and the operation of pneumectomy was resorted to. After thorough disinfection of his hands and of those of his assistants and also of the injured region the lungs were gently pulled out and a strong cat-gut ligature applied upon a healthy portion of the organ. The prolapsing and diseased lung was then amputated as close as possible to the ligature. The stump was carefully returned in the thorax and the wound, closed with eight stitches, was dressed with strict antiseptic measures. After two or three days the dog was without fever, although weak and breathing with difficulty. In eight days all the stitches were taken off, the wound being perfectly closed. Somewhere after one month, the dog was well. His breathing remained a little short.—(*La Clinica Veterin.*)

VAGINAL HYSTEROTOMY [*Same Author*].—First the author records two cases where he performed it and extracted a living calf. In both cases the cow died. But neither from the operation. One carried a second foetus which was in bad position and could not be delivered. She was slaughtered two days after. The other died from septicemia.

The conclusions are: The operation of vaginal hysterectomy is not difficult nor dangerous, either for the mother or the foetus, if done in time and with the following attention during and after the operation. 1. Accurate disinfection of the hands, being careful that the nails be very clean, short and that no rings be on the fingers. 2. Disinfection of the tail, vulva and vagina with abundant antiseptic solutions, with irrigations with the same while the operation goes on. 3. Use a convex bistouri cache, like that of Malkmus. 4. Avoid incising the inferior wall of the uterine cervix so as not to injure the bladder or the ureters.

5. Complete the delivery by exploring again the uterus to see if there is not another foetus; if so extract it. 6. Every day after delivery disinfect the tail, vulva, anus and vagina.—(*La Clinica Veterin.*)

TRAUMATIC ABDOMINAL HERNIA [*Dr. Adolpho Luciani*].—A two-year-old colt is turned out in a field where a cow with horns inflicted on the right side of his abdomen an injury manifested by a swelling which is increasing gradually and soon is as large as a little boy's head. The swelling is not warm nor painful, but puffy like. It is reduced by pressure and then one can feel a rupture in the abdominal walls, 10 centimeters long and running obliquely from downwards upwards. Treatment by compression or by cauterization is not practicable and surgical interference is adopted. Chloroformization was assisted by first an injection of morphine and atropine. The parts were disinfected, the skin was incised, then the subcutaneous tissue and the hernial ring was exposed, formed by the lacerated aponeurosis of the great oblique, the fleshy portion of the small oblique and the transversal muscle. The intestines being well returned in place, to prevent their exit during the sawing, a piece of sterilized gauze was introduced in the abdomen and gradually withdrawn as the stitches were made. The transverse and small oblique muscles were sawed first, then the aponeurosis of the great oblique and finally the skin. Phenicated cleaning; collodion and ichthiol dressings. After six days the cicatrization was perfect.—(*Il Nuovo Ercolani.*)

PAPILLOMA OF THE URETHRA AND BLADDER IN A COW [*Prof. Garibaldo Lisi*].—Although in first class condition and apparent health this animal has recently manifested some little difficulty in urinating and the trouble has grown worse. At first she only had small streams and now the emission of the urine is difficult and very painful. In exploring through the vagina, the writer detected at the entrance of the urethra numerous small tumors with peduncles and attached to the mucous of the urethra. The introduction of a stiff oesophageal probang allowed to discover that these tumors extended also in the bladder, which was full of them. The cow was killed. The urethra and the bladder were covered with these tumors attached with peduncles to the mucous membrane and formed cauliflower-like growths which were bulging into the vaginal cavity to some extent. There were some at

the neck of the bladder and also on the superior face of the organ towards its base. The tumors did not exist in any other parts of the body, all the organs being in sound condition. Their papillomatous nature was confirmed with histological examination by microscope.—(*Il Nuovo Ercolani*.)

GERMAN REVIEW.

By JOHN P. O'LEARY, V.M.D.

REPORTS FROM THE NINTH INTERNATIONAL VETERINARY CONGRESS AT THE HAGUE, 1909, INTERNAL DISEASES [*Dschunkowsky*].—The author designates the Caucasus and Transcaucasus as the home of the blood parasitic diseases, which geographically, hydrographically, geologically and climatically present the most extreme diverse conditions that are favorable for the propagation of the various species of blood-sucking parasites. Fifteen varieties of ticks are recognized. Pyroplasmosis was described as affecting the sheep, goat, horse, ass, mule and dog; also experimental investigations, beside illustrations representing the parasites and infected portions of the body. For example, the tropical pyroplasmosis of cattle transmitted by the species of tick *Rhipicephalus decoloratus var calcarata*, the Texas fever caused by the large pear-shaped parasite and transmitted by the infected larva of the *Rhipicephalus calcarata*. As worthy of mention he cites the occurrence of pyroplasmosis in the hare and bat. In conclusion he remarks that the blood parasites contribute much to the enzootic disease among native cattle which appear usually in a chronic form. Acute cases are only observed in changed conditions in the manner of living.

Concerning Spirillosis Anserina. This disease was discovered by Dr. Sacharow in the year 1890. It is prevalent in the Northern Caucasus and Transcaucasus, where it claims equally as many victims as chicken cholera. The symptoms are weakness, sitting posture most of the time, inappetance, diarrhœa, emaciation, anæmia, paleness of the visible mucous membranes, especially the beak and webs of the feet. Pathological findings: liver

a reddish brown with yellowish points hyperæmic and much enlarged, interspersed with several large necrotic foci, spleen considerably enlarged and friable; its surface likewise dotted with necrotic foci; kidneys cloudy, swollen and yellowish, undergoing fatty degeneration. The pericardial sac contained a fibrinous exudate, ecchymoses on the epicardium; heart muscle undergoing fatty degeneration; enteritis spirochetæ were present in the intestines; they were easily discernible in the blood through microscopical examination. The spirochetæ anserina are fine wavy-like threads with pointed ends 6.86 to 15.01 microns in length and 0.21 micron in width; motile easily stained with fuchsin or gentian violet. After numerous investigations and discussions as to the curative measures and inoculation experiments, the author concludes that atoxyl is the only reliable therapeutic agent we possess for the treatment of this disease.

PROPHYLAXIS AND PATHOLOGY OF THE PROTOZON DISEASES (Report from the Ninth Veterinary Congress at the Hague, 1909, continued) [*Knuth*].—The author reviews the present status of the prophylaxis of the protozoon diseases. He proceeds as follows: Smith and Kilborne in the year 1890 discovered the cause of Texas fever in cattle, which they attributed to a pyroplasma. All tropical and subtropical countries are propagating centers of the pyroplasma of the domestic animals; perhaps also wild animals. Some species of the pyroplasm occur in temperate and cold climates. Ticks are always the carriers of the disease. The individual species of pyroplasma are transmitted by particular kinds of tick. Yet there are in the same species of domestic animals various types of pyroplasma. The pyroplasma occurring in animals is similar to the parasites of human malaria. In both groups of diseases stinging insects are a factor. In the human subject certain mosquitos; in animals certain ticks. These insects are the transmitters of living parasites, which live in and upon the red blood cells, and which destroy and dissolve the erythrocytes; within a few weeks the number of red blood corpuscles may be reduced from eight millions to one million and even less. As a result bile products increase enormously, the urine is tinged red, jaundice and anæmia are sequelæ. The malaria of man is combatted with quinine and the destruction of the mosquito, particularly the species *anopheles*. In the same manner the prophylactic measures against the pyroplasma, the trypanosoma and spirocheta must be carried out in the case of animals. A method

of treatment similar to that employed for the human subject has not been discovered for the treatment of animals. Experiments in the line of inoculations have not been reached; or at least no positive results have been obtained. Cattle which have contracted Texas fever can to a certain extent be protected against pyroplasmosis. Coal oil is effective for the destruction of ticks. The author described in detail the various methods employed which met with more or less success in the extermination of the tick.

PROPHYLAXIS AND PATHOLOGY OF THE PROTOZOON DISEASES (Report from the Ninth International Veterinary Congress at the Hague) [*Dr. Motas*].—After thoroughly describing the various methods of inoculation employed against pyroplasmosis, trypanosomiasis, the author recapitulated that the inoculations practised by Schröder, Francis and Hutcheon with a virus were not successful. The protective inoculation with an attenuated virus according to Schütz, Weber, Rossel and Meissner resulted in this, that the animals, sixty days after the inoculations were made upon them, could be exposed to natural infection without danger. Immunizing with pulverized ticks was unsuccessful. The serum derived from hyperimmunized animals (with the exception of dogs, which may be immunized for a time), has no effect on cattle and sheep affected with pyroplasmosis. Inoculating with a pure highly virulent virus mixed with bile gave satisfactory results. Preventive measures are destruction of the ticks, plowing and seeding for new pastures, enacting laws regulating the shipping of cattle from infected districts. The pathogenesis of pyroplasmosis is yet little studied. The incubation period extends over months. This stage is dependent upon the quantity and virulence of the pyroplasma. The parasites penetrate the blood corpuscles which rupture. The pyroplasma now thrive and propagate therein. They secrete toxins which produce fever and dilatation of the capillaries, sleepy sickness, and probably hæmolysis.

THE PROPHYLAXIS AND PATHOLOGY OF THE PROTOZOON DISEASES (Reports from the Ninth International Veterinary Congress at the Hague) [*Dr. Penning*].—In the Lowlands of East India the following diseases occur: Trypanosomiasis, pyroplasmosis and psorospermiosis. Among the trypanosoma diseases which are pathogenic, he mentions the surra disease, which in

Africa is called nagana. This disease is without exception fatal to horses, mice, rats, dogs, cats, rabbits guinea pigs and monkeys, while buffalo, cattle, deer, sheep, goats and swine usually survive an attack and do not present any pronounced symptoms of disease when infected. Infection occurs through the sting of a diptera, a parasite which is found only in the open, and which belongs to the family Tabanidæ. Animals which are housed escape infection; for that reason the best method employed for the suppression of an epizootic is the confinement in houses or barns of all susceptible animals.

Dourine is the result of a trypanosoma which cannot be differentiated microscopically from those organisms which are responsible for surra disease. The parasite is found in the lymph, rarely in the blood. Infection occurs during copulation. Psoroptosis occurs in the flesh of all food-producing animals, more particularly in the buffalo. These parasites produce no clinical symptoms of disease in the host. They appear in the form of the well known elongated bodies; sarcosporidan cysts which are filled with half moon shaped bodies. The use of the meat which is infested with these cysts is innocuous. An intramuscular injection of the contents of these sarcocysts is fatal to guinea pigs and rabbits. The history of the development of the parasite is unknown.

PROPHYLAXIS AND PATHOLOGY OF THE PROTOZOON DISEASE (Report from the Ninth International Veterinary Congress at the Hague [*Prof. Bey*].)—Concerning pyroplasmosis, the author mentions three forms occurring in cattle; he also speaks of pyroplasmosis in the horse in Northern Africa and of a repeated outbreak of a fatal canine pyroplasmosis in India and Egypt. With regard to trypanosomiasis, the author maintains that our knowledge of this disease among camels has materially increased. The three forms found in the camel which are due to the trypanosoma evansi, the cause of surra, are M'bori, d'el Debab, and Zufana. The Gambian disease of the horse is attributed to the trypanosoma dimorphon; it is prevalent over the interior of tropical Africa. It is evident that the glossina cultivates the excitator, which can develop enzootic centers of trypanosomiasis. The mosquito's stomaxen infect directly or indirectly; they cannot develop an enzootic form of the disease.

THE PROPHYLAXIS OF THE PROTOZOON DISEASES (Report from the Ninth International Veterinary Congress at the Hague)

[*Dr. Theiler*].—The most important tropical diseases in South Africa may be classed in the following manner:

A. The diseases transmitted by insects (mosquitos, flies).

(a) Trypanosomiasis.

(b) Ultramicroscopical Vira.

B. The diseases transmitted by ticks.

(a) Piroplasmosis.

(b) Spirochætosis.

(c) Ultramicroscopical Vira.

Among the various species of trypanosomes in South Africa, the following are the principal: *T. brucei*, *T. evansi*, *T. cazalboni*, *T. Sudanense*, *T. nanum*, *T. pecaui*, *T. dimorphon*, *T. Congolense* and *vivax*. These forms are transmitted either by the glossina or blood sucking flies. Prophylaxis requires the removal of animals from the infected area. The disease may be prevented by destroying the infecting flies. In certain forms of trypanosomiasis the wild animals must be exterminated and all brush wood and coarse reedy vegetation must be cut down and cleared away. The importation of animals from infected districts must be forbidden. The ultramicroscopical vira is the source of the fatal horse sickness in Africa and the blue tongue which is probably caused by a mosquito; however proof of this has not been brought forth. All forms of pyroplasmosis are the result of infection through ticks, and which may be transmitted artificially, with the exception of the pyroplasmosis caused by the *trypanosoma parvum*. In all artificially produced cases of pyroplasmosis, the immunized animals are capable of infecting. The same applies in the case of spirochætosis. Heart water (*ultramicroscopical virus*); the immunized animal is not capable of infecting. First, we must inoculate the animal to obviate infection, in which case the animal must be removed to a distance from the infected district (only possible when the immunized animal is not capable of infecting (*East Coast Fever, Heart Water*); second, by starving the ticks the disease is eradicated.—(*Osterr. Monatschrift für Tierheilkunde*, 34 Jahrg. No. 11, 1909.)

AVINE TUBERCULIN AS A DIAGNOSTIC AGENT IN CHRONIC PSEUDO-TUBERCULOUS ENTERITIS OF CATTLE (Johnes Disease) [*Vet. O. Bang*].—Chronic pseudo-tuberculous enteritis of cattle is a widespread disease due to an acid-fast bacillus which has been discovered within the last few years, and very closely resembling the tubercle bacillus. Prof. B. Bang, of Copenhagen,

proved that the disease is chronic and infectious. Healthy cows became infected when fed with pieces of intestinal mucous membranes of cattle affected with the disease. Animals which contract the disease become extremely emaciated, and in many cases a severe diarrhoea is a concomitant. The pathological anatomical lesions are limited exclusively to the intestinal canal and mesenteric glands. There is a diffuse thickening of the mucous membrane and frequently also of the submucosa. Ulcerations or cheesy or calcified processes are observed only then in the intestines, when, besides pseudo-tuberculous enteritis, tuberculosis is present, otherwise never.

The extent and malignity of this form of enteritis in cattle in Denmark may be estimated from the amount of money paid as indemnities by insurance companies for animals which succumbed or were killed on account of the disease, the sum paid for one year being 29,000 m. Cattle which are suffering from pseudo-tuberculous enteritis do not react to injections of tuberculin, even when doses of 20 grammes of the ordinary tuberculin is injected. Olaf Bang had just undertaken experiments on cattle affected with pseudo-tuberculous enteritis in order to determine the effect of injections of tuberculin prepared from avine tubercle bacilli. The results were that the injections of avine tuberculin on cows so affected was accompanied by a hyperthermia, reacting in the same manner as a tuberculous cow injected with ordinary tuberculin. In the demonstration of avian tuberculin Bang in preparing his tuberculin employed eight three to four-months'-old avine tubercle strains which had been grown on the surface, and all derived at the same time from tuberculous poultry. The individual doses for a cow hypodermatically of the avine tuberculin varied between 75 cg. and 2 grms. It was hoped that by means of the avine tuberculin it would be possible to combat the pseudo-tuberculous enteritis of cattle, particularly to establish a diagnosis in the earlier stages through this method of inoculation. Hence the difficulty arises that in tuberculous stables the cattle which are already tuberculous, may react to avine tuberculin. In such cases we can only prove that the reacting animal has either tuberculosis or pseudo-tuberculous enteritis or both. A more accurate diagnosis may be obtained regarding the nature of the disease through the ordinary tuberculin test or the ophthalmic reaction. In this way both diseases may be eradicated at the same time by separating the reacting from the healthy animals. The supposition that the pseudo-

tuberculous enteritis of cattle is perhaps caused by the avine tubercle bacillus is doubtful, because hens resist to a very high degree feeding and inoculation with infected material taken from cattle suffering from pseudo-tuberculous enteritis, and because true tuberculosis can be produced in cattle by feeding them with avine tubercle bacilli.—(*Zentralblatt für Bact., n. s. w.*, 1909, I *Abt. orig. bd.* 51, S. 450.)

MODIFICATION OF SOUTHERN CATTLE QUARANTINE.—The Secretary of Agriculture has issued an order, effective April 1, releasing from the federal quarantine for Texas fever or tick fever of cattle certain areas amounting to over 48,000 square miles. This action is taken as a result of the good progress made in the extermination of ticks which spread the disease. The territory released is as follows:

In California, the counties of Fresno, Tulare, Ventura, Los Angeles, San Bernardino, Riverside, and a portion of San Luis Obispo County.

In Texas, the counties of Borden, Glasscock, Upton, Crane, and portions of the counties of Pecos and Terrell. Privilege for movement on inspection from the counties of Wilbarger, Baylor, and portions of the counties of Hardeman, Foard, Knox, and Haskell is revoked.

In Oklahoma, portions of the counties of Noble, Payne, Cleveland and Jackson. Privilege for movement on inspection is provided for portions of the counties of Lincoln, Cleveland, Caddo and Jackson, and revoked for a portion of Kay County.

In Arkansas, the counties of Benton and Washington.

In Mississippi, the counties of De Soto, Tate, and Tunica.

In Tennessee, the counties of Bradley and James.

In Georgia, the counties of White, Habersham, and Stevens.

In Virginia, Brunswick County.

The total territory freed of ticks and released from quarantine since the beginning of the work of tick eradication in 1906 aggregates about 130,000 square miles, or an area nearly half the size of the State of Texas.

The recent order also prescribes regulations for the territory remaining in quarantine. Copies of this order may be obtained on application to the Bureau of Animal Industry, Department of Agriculture, Washington, D. C.

SOCIETY MEETINGS.

NORTH DAKOTA VETERINARY MEDICAL ASSOCIATION.

The eighth annual meeting of this association convened in the recitation room of the Veterinary Department of the Agricultural College at Fargo, N. D., January 18, 1910, at 9 a. m., with temporary chairman C. H. Babcock in the chair.

Roll call showed twenty-seven members present and the following distinguished visitors: Dr. W. L. Williams, Cornell University, New York; Dr. S. H. Ward, State Veterinarian, St. Paul, Minn.; Dr. F. Falconer, Alexandria, Minn.; Dr. C. D. Harris, of the A. C. Faculty, Fargo, N. D., and a number of veterinary students from the Fargo Agricultural College.

Minutes of the last meeting were read and approved.

There being no unfinished business of any importance, the several committees reported, applications for membership were received and acted upon, and the election of officers proceeded with, which resulted as follows:

President—C. H. Babcock, New Rockford, N. D.

Vice-president—J. W. Robinson, Garrison, N. D.

Secretary—C. H. Martin, Valley City, N. D.

Treasurer—B. C. Taylor, Hillsboro, N. D.

The meeting then adjourned until 1.30 p. m., when, under the head of "New Business," motion was made by W. F. Crewe, seconded by E. J. Davidson, that the association instruct the Legislative Committee to amend the statute, reducing the license of practising veterinarians from \$3.00 to \$2.00 per annum; also to amend the statute, increasing per diem of the examining board from \$3.00 a day and expenses to \$10.00 per diem and expenses, to be presented at the next session of the legislature. Carried.

Moved by Davidson, seconded by Taylor, that the same committee solicit a report of the secretary of the State Examining Board. Carried.

Moved by Martin, seconded by Dunham, that the association instruct the president to appoint delegates to the next annual

meeting of the American Veterinary Medical Association. Carried.

Moved by Davidson, seconded by Winsloe, that all members in arrears for association dues be notified by the secretary. Carried.

Moved by Benson, seconded by Jackson, that the secretary be instructed to get printed by-laws of the association, and forward same to each member. Carried.

The reading of papers was then taken up as follows:

"The Application of the Mallein and Tuberculin Tests," by W. F. Crewe.

This subject was very interesting and instructive, the author placing considerable reliability on person making tests, ability to recognize constitutional disturbances, etc. He recommends the apththalmic method, especially if the subcutaneous method had been used within thirty days previously for fraudulent purposes.

Discussion by Drs. Williams, Davidson, Farley, Van Es and Anderson, which revealed cases of carelessness, incomplete and doctored charts and failure to report result of tests to the proper authorities.

Moved by Babcock, seconded by Dunham, that the association express a wish that each member report in full and account for all material to the North Dakota Serum Institute. Carried.

"Prolapsus Ani," by C. H. Babcock.

This was a very interesting paper, the author describing his methods of operation.

Discussion by a majority of the members present.

"Pathological Horseshoeing and Balancing," by J. E. Carter.

The author described leveling and preparation of the foot for the shoe, and described various shoes used in treatment of lameness, etc.

Discussion by several of the members.

"Colibacillosis," by L. Van Es.

This was a very interesting subject, and a very important one, as was shown by the lengthy discussion following being participated in by a majority of the members present, Dr. Williams citing where in New York state this disease alone causes an enormous loss to the dairy interests.

"Oophorectomy," by Ernest Schneider.

This paper was very interesting and instructive, the doctor describing the various methods of operation on the different animals. Discussion by all the members.

Dr. J. W. Robinson reported several cases of glanders and farcy, and results of the mallein test on same. Discussion by Drs. Davidson, Crewe, Walsh and Van Es.

C. H. Martin reported a case of Prolapse of the Intestines Following Castration, describing his method of reducing and the maintaining of same in the abdominal cavity.

Discussion by Drs. Williams, Seed and Van Es.

Dr. F. L. Cusack reported several cases of choke and the good results he had obtained from the hypodermic use of arecoline. Discussion by several of the members.

Dr. J. W. Jackson reported results of a post mortem on a hog and exhibited specimen of tubercular lesions. Discussion by a majority of the members.

The meeting then adjourned until the following day at 9 a. m.

At 8.30 p. m. all assembled at the banquet hall of the Hotel Gardner, where covers were laid for 40, and a sumptuous repast was served jointly with the Live Stock Association. After the cigars were lighted Toastmaster De Lancy called on Col. Wilson, of the stockmen, who gave a talk on "Types of Breeds," comparing the northern with the southern breeds.

Toastmaster Van Es introduced Dr. W. L. Williams, and in response for the veterinarians gave a talk on "Quacks and Quackery," as related to the interests of the profession and to the live stock interests.

President Worst, of the Agricultural College, gave a very interesting talk on live stock, college work, etc.

Meeting called to order at 9.00 a. m. by President Babcock, asking the pleasure of the members.

It was moved by Anderson, seconded by Walsh, that we proceed with paper of Dr. Williams. Carried.

Dr. Williams read a paper on the castration of cryptorchids, giving his methods in the various phases of the operation, both in the normal and abnormal conditions as they were found. This paper was conceded as one of the very best ever produced on this subject and a general discussion followed by all the members.

President Babcock then called on Dr. S. H. Ward, State Veterinarian of Minnesota, who gave us a very interesting talk on contagious diseases, mentioning some of the unprofessional and fraudulent work done in mallein and tuberculin testing received from various states, citing several cases where a retest showed typical reactions.

Dr. Van Es then stated that he had procured three cryptorchids for the clinic, and advised the members that one was for sale which could be bought for \$60.00. The hat was passed and the amount collected in a very few minutes.

The members then adjourned in a body to the operating room, where a three-year-old cryptorchid was already on the table and under the anæsthetic. Dr. Williams proceeded with the operation, withdrawing the vas deferens through the inguinal ring enclosed in a fold of the peritoneum, which he secured in that position with forceps, and each member who wished made an exploration of the parts. The animal was then destroyed, the abdominal walls laid back, viscera removed, when the testicle could be seen in the pelvic cavity.

At 2.30 the meeting was again called to order by the president.

Moved by Van Es, seconded by Crewe, that a vote of thanks be extended to Dr. Williams. Carried (rising vote).

Moved by Schneider, seconded by Farmer, that copies of Dr. Williams' paper be sent by the secretary to the AMERICAN VETERINARY REVIEW and the *Missouri Valley Veterinary Bulletin*. Carried.

Moved by Taylor, seconded by Farley, that the Institute feature be continued another year. Carried.

Moved by Crewe, seconded by Schneider, that \$125, or as much as be necessary thereof, be appropriated for the use of the Institute Committee for the next year. Carried.

Moved by Simmons, seconded by McDonnell, that the next annual meeting be held at Fargo, N. D., beginning on Wednesday of the same week as the Tri-state Grain Growers' Convention. Carried.

Moved by Dunham, seconded by Farley, that the first day of the meeting next year be held down town under the auspices of the Banquet Committee. Carried.

Dr. Van Es notified the association that Dr. Williams would further demonstrate his operation on two cryptorchids in the forenoon of the following day, to which the entire association agreed to attend.

President Babcock then announced the appointment of his committees for the ensuing year.

After notice of a social meeting at 5 p. m., the meeting adjourned until the next meeting, subject to call of the secretary.

C. H. MARTIN, Secretary.

GENESEE VALLEY VETERINARY MEDICAL ASSOCIATION.

The Thirteenth Annual Meeting of this association was held at the Rochester Club House, Rochester, N. Y., on Friday, January 7, 1910. Twenty-two members responded to the roll-call, also the following visitors: Doctors Hollingworth, of Utica, president of our state society; H. E. Turner, of Lyons; Dr. Chase, of Rochester, N. Y.

President J. E. Smith gave an address and spoke of the friendly feeling among our members and urged on all the necessity for strengthening this feeling, so that we would always treat a competitor as a brother, thereby commanding the respect of our clients and strengthening our social standing by so doing.

The following were elected directors for the ensuing year: Doctors J. E. Smith, A. George Tegg, Warren E. Stocking, W. G. Dodds, H. S. Beebe, G. E. Kesler, O. B. French, J. H. Taylor, F. E. Cleaver, and L. R. Webber.

The following were elected as officers of the association:

President—F. E. Cleaver.

Vice-president—L. R. Webber.

Secretary—J. H. Taylor.

Treasurer—A. G. Tegg.

Censors—J. E. Smith, Warren E. Stocking, W. G. Dodds, H. S. Beebe, G. C. Kesler, and O. B. French.

After lunch the meeting was called to order by the newly-elected president, Fred E. Cleaver, and the following resolution passed, amending our constitution:

Resolved, There shall be added to Article XI. the following, to be known as Section V. of Article XI.: Any legally authorized practitioner of veterinary medicine and surgery in good standing, residing outside of the counties of Monroe, Livingston, Ontario, Wayne or Orleans, may become an associate member of this association by proceeding in like manner as in Section II. of Article XI. He shall pay the same initiation fee, and the same dues and assessments, and be subject to the by-laws and entitled to all the privileges of the association except voting or holding office.

The Board of Censors reported favorably on the applications of Alfred Tuxill, of Auburn, and R. Perkins, of Warsaw, for election as associate members. They were elected.

Doctors H. S. Beebe and John O. Moore each read short, pithy papers on "Grease Heel," which were followed by a spirited discussion, which brought out the fact that the most successful treatment was the application of hot antiseptic poultices or packs, followed by astringents in glycerine or olive oil.

Doctors A. Geo. Tegg and J. W. Corrigan read papers on "Purpura Hæmorrhagica," and the discussion was opened by Doctor Stocking reporting a case in his own practice. A spirited discussion followed these papers, participated in by Doctors Tegg, Kester, Moore, Taylor, Corrigan, Webber and Johnson.

Doctors W. J. Payne and J. E. Smith each gave short talks on "Agoturea and Its Treatment." These talks brought out a lengthy discussion. The men who treated their cases by keeping the animals quiet by both care and treatment seemed to get the best results. Never urge a horse to get up until he is able to stand.

The question box was then opened and proved an interesting and instructive part of the program.

Dr. Tegg reported on the cases operated on at our July meeting. The cases all did well, excepting the gray horse with the tumor on his shoulder. This proved malignant and did not recover.

Doctor Hollingworth entered the hall at this time, and was given an informal reception. He was introduced to each one present. The meeting adjourned at this time for dinner, which was given by the association. Twenty-four sat down to the table at six o'clock.

After dinner the meeting was called to order and Doctor Hollingworth was introduced as the speaker. He congratulated us on having such a harmonious and progressive association. He said Rochester was known as a city of clean milk and that was why he had appointed Doctor Tegg as a member of the Clean Milk Committee of the state society. He spoke of the necessity for state meat inspection, establishment of central slaughter houses, under the control of inspectors, veterinary surgeons being the logical sanitarians.

The following resolution was passed:

Whereas, It has come to our knowledge that only about one-third of the meat consumed in this state is inspected, and that many of the slaughter houses at which the remaining two-thirds is slaughtered are unsanitary, be it

Resolved, That we ask the legislature to enact such laws as are necessary to establish proper and thorough inspection of all

meat slaughtered in the state, also that central abattoirs be established to facilitate such inspection. And that said inspection be done by competent veterinary surgeons under the Bureau of Veterinary Service of the Department of Agriculture.

Prof. V. A. Moore was elected an honorary member of the association in recognition of his work for the veterinary profession.

J. H. TAYLOR, Secretary.

CALIFORNIA STATE VETERINARY MEDICAL ASSOCIATION.

The regular quarterly meeting of this association was held at Einstein's Hall, Fresno, California, on Wednesday, March 9, 1910.

The meeting was called to order at 10.30 A. M. by the president, Dr. David F. Fox, of Sacramento.

Owing to the absence of the secretary, Dr. J. J. Hogarty, the president appointed R. A. Archibald as secretary pro tem.

Roll call showed the presence of the following members: Drs. J. F. Ast, James Boyd, L. A. Covell, W. F. Betzold, Geo. Gordon, Frank Griffith, Chas. Keane, W. W. Thomas, B. D. Holt, C. M. Haring, W. A. Seabury, L. A. Tuttle, P. H. Browning, L. A. Danielson, Chas. Sears, J. P. Iverson, E. J. Creely, R. A. Archibald, D. F. Fox, Otis A. Longley, T. L. Dardis, Geo. S. Rey, F. E. Twining and A. J. Sorensen.

The following visitors were present: Drs. B. Williams, Geo. Edwards, B. F. Ellis, and Wm. S. J. Strauss, editor of the *California Live Stock and Dairy Journal*.

Minutes of the previous meeting were read and approved as read.

Under the head of reports of Board of Examiners and Committees, the Board of Examiners reported favorably upon the applications of Drs. W. J. C. Ramsay, B. D. Holt and George C. Taylor. The report upon motion was accepted and placed on file.

Dr. R. A. Archibald as chairman of the Committee on Entertainment of the A. V. M. A. reported progress. He stated that complete arrangements had been made as far as headquarters, hotel accommodations and a place of meeting were concerned. He

urged the members to look out for and locate suitable cases for clinical demonstrations. He also urged the members to send in their subscriptions as soon as possible in order that the Committee might know at an early date just how much funds would be available. The report was received and the committee given further time.

The following applicants applied for membership in the Association:

Dr. L. A. Tuttle, San Francisco, graduate of the San Francisco Veterinary College.

Dr. Geo. S. Rey, Dinuba, graduate of the San Francisco Veterinary College.

Dr. A. J. Rydberg, San Rafael, graduate of the San Francisco Veterinary College.

Dr. A. R. Asbill, Eureka, graduate of the San Francisco Veterinary College.

Dr. Chas. H. Sears, Bakersfield, licentiate.

Dr. W. A. Seabury, Coalinga, Grand Rapids Veterinary College.

Dr. W. W. Thomas, Merced, Western Veterinary College.

The same having paid their initiation fees, their applications were referred to the Board of Examiners to be reported upon at the next meeting.

Under the head of Admission of New Members, the following were duly elected to active membership:

Dr. W. J. C. Ramsay, graduate of the San Francisco Veterinary College.

Dr. B. D. Holt, graduate of the San Francisco Veterinary College.

Dr. George C. Taylor, graduate of the San Francisco Veterinary College.

Under the head of New Business, the secretary read a communication from Dr. Lyman, secretary of the A. V. M. A., requesting the association to elect delegates to the 1910 meeting in San Francisco.

Upon motion, duly seconded and carried, the president appointed the following delegates to the meeting of the A. V. M. A.: Drs. R. A. Archibald, H. H. Hicks, Chas. Keane, H. A. Spencer and C. M. Haring.

A communication was also read from Dr. H. A. Spencer regretting his inability to attend the meeting and urging upon the members the necessity of assisting the Entertainment Commit-

teen in every way possible in order to make the A. V. M. A. meeting the most successful in its history. The letter evoked much applause.

The following bills against the association were presented: J. J. Hogarty, letter heads, circular letters, postal cards and stamps, \$10.85, and O. A. Longley, rent of Einstein's Hall, \$7.50. The same being found to be correct, upon motion duly second and carried, warrants were drawn on the treasurer for the several amounts.

The hour of 12 M. having arrived, the meeting upon motion adjourned to meet in the afternoon at 2 P. M.

The meeting reconvened at 2 P. M. President Dr. David F. Fox in the chair.

The reading of papers and discussions were taken up.

Under this head Dr. P. H. Browning, of San Jose, was called upon and responded by reading a very interesting paper dealing with the various intellectual and entertainment features of the coming meeting of the A. V. M. A. He urged the members to bring their wives and other female relatives and to come prepared for the time of their lives, as he was willing to give a personal guarantee that there would be something doing all the time.

Dr. R. A. Archibald, of Oakland, addressed the meeting upon the subject matter of "Passive Hyperæmia as a Therapeutic Agent." The address was followed by a brisk discussion, which nearly all present joined.

The subject matter of glanders was brought up and was discussed by Drs. Keane, Iverson, Fox, Haring, Boyd, Holt and others, and in this discussion Dr. Archibald was requested to talk upon the mallein reaction and the many peculiar features incidental thereto. Dr. Archibald responded by discussing in detail the nature of mallein and tuberculin. The peculiarities of the pathological changes that were produced by glanders and tuberculosis and the reasons why mallein and tuberculin did not produce reactions in healthy animals or recent reactors and why they did produce reactions in diseased individuals.

Dr. A. J. Sorenson, of Modesto, then read a very interesting and instructive paper upon "Granular Venereal Disease of Cattle, Sometimes Called Vaginal Catarrh or Infectious Vaginitis." The paper was followed by an exceedingly interesting discussion in which nearly all present participated. The discussion brought forth the fact that there was great need of a thorough investigation of this cattle scourge and it resulted in a motion authorizing

and instructing the president to appoint an investigating committee whose duty it will be to investigate this disease and make a report at the next quarterly meeting.

The president appointed Drs. Haring, Longley, Sorenson and Boyd.

The time for adjourning being at hand, the president called for a report from the Committee on Arrangements to make suggestions as to the next place of meeting. Dr. Browning invited the members to meet in San Jose and Dr. Haring extended an invitation to meet at Davis at the Experimental Farm. Upon putting the matter to a vote, Davis was unanimously selected as a place of meeting.

The president appointed the following as essayists for the next meeting: Drs. Haring, Creely, Ast and Archibald.

There being no further business to come before the association, upon motion duly seconded and carried, it adjourned to meet in Davis on the second Wednesday in June, 1910.

CLINIC.

Prior to the meeting a very interesting clinic was held at Dr. Otis A. Longley's Hospital, during which a number of interesting cases were presented for diagnosis. One of the most interesting cases was a large draught stallion presenting what was supposed to be a tumor of Bursetta origin hanging from the abdomen just in front of the naval, and weighing in the neighborhood of 40 to 50 pounds.

Dr. Edward J. Creely operated upon a mule affected with contracted tendons, and Dr. R. A. Archibald demonstrated a Quit-tor operation.

R. A. ARCHIBALD, Secretary *pro tem*.

B. A. I. VETERINARY INSPECTORS' ASSOCIATION OF CHICAGO.

The regular monthly meeting was held April 8, 1910, at 8 p. m. The meeting was well attended and most of the members present took active part in the discussion of the papers presented.

On behalf of the Animal Food Hygiene Committee, Dr. H. D. Paxson read a very interesting paper on "Meat Poisoning."

Dr. G. E. Maxwell read an instructive paper on "Immunity." In the discussion which followed, these questions are a few of those which arose:

1. Why are men not more often infected with tuberculosis on the killing floor?
2. Why is the deep bay horse used in the production of serum?
3. How is immunity to Texas Fever maintained?

Dr. J. Myers and Dr. Max Siereveld were admitted to active membership. Mr. A. H. Roop, chief chemist for the Chicago Division of the Bureau of Animal Industry was admitted to Honorary Membership.

Adjournment was agreed upon at 11 p. m. The next regular meeting occurs on the eve of the second Friday in May.

H. A. SMITH, M.D.V., Secretary-Treasurer.

ALUMNI ASSOCIATION, NEW YORK-AMERICAN VETERINARY COLLEGE.

The regular annual meeting of the Alumni Association of the Veterinary Department of New York University was held in the college building on Wednesday, April 20, 1910, at 3 o'clock p. m. The president, Dr. T. Earle Budd, in the chair. A fair attendance of members was present.

The roll-call being dispensed with, the minutes of previous meeting were read and approved.

The matter of dues and collections was discussed, and upon motion the secretary was instructed to notify each member of the association that all back dues were cancelled and all members were in good standing to the close of the year 1909. The secretary was also instructed to mail each member of the association a bill for dues, dating from January 1, 1910.

The executive committee reported that the annual banquet of the Alumni Association, to be held at Reisenweber's at 7 o'clock in the evening, would have the largest attendance of any in the history of the association.

Library Committee reported progress.

Treasurer's report of balance of \$10.00 was accepted, and upon motion, the secretary was instructed to communicate with Dr. L. L. Glynn, the outgoing secretary, and ask him to forward amount of treasury account.

The class of 1910, upon motion, was admitted to membership as a whole, upon complying with the by-laws of the association.

Election of officers resulted as follows:

President—Dr. R. S. McKellar.

Vice-President—Dr. W. C. Miller.

Secretary—Dr. J. F. Carey.

Treasurer—Dr. H. F. Harms.

Under the head of New Business the matter of appointing a delegate of the Alumni Association to attend the forty-seventh annual meeting of the American Veterinary Medical Association, to be held in San Francisco, California, on September 6, 7, 8, 9, 1910. Upon motion Dr. L. L. Glynn was appointed a delegate to represent the Alumni Association at said meeting.

The subject of certificates for members of the Alumni Association was discussed thoroughly, and upon motion the secretary was instructed when sending bill for dues to add 50c. to help defray the cost of certificate, explaining same to members, and when there was available funds in the treasury, the certificates will be sent to each member.

Upon motion meeting was adjourned.

The banquet was a decided success, having a larger attendance than any held for a long period. Many fine addresses were listened to with great pleasure.

J. F. CAREY, Secretary.

THE Colorado State Veterinary Medical Examining Board will hold a summer examination June 3 and 4, 1910, for graduates who wish to obtain a licence to practice in that state. The examinations will be held at the Capitol, Denver, Colo. Application blanks can be obtained from the secretary, Dr. W. W. Yard, Room 18, Capitol Building, Denver, Colo.

DR. J. F. DE VINE, chief veterinarian of the New York State Department of Agriculture, entertained the Physicians' Club of Orange County at his home in Goshen, on the evening of April 23d last, when he addressed them on the "Relation of the Medical and Veterinary Professions." Dr. De Vine is himself a member of the club, which suggests that his relation to the medical profession is very close, his medical brethren regarding him as a physician, even though his patients are not of the human race. It is such men as Dr. De Vine who do so much to blend the two branches of medical science.

NEWS AND ITEMS.

DR. RICHARD H. POWER, of Fort D. A. Russell, Wyo., has resigned from the army service to resume general practice, entering into a partnership with Dr. J. M. Creamer, Portland, Oregon.

THE annual meeting of the Missouri Valley Veterinary Association will be held in Omaha, Neb., in July. Every one living in the Middle West should begin to plan now to attend this meeting.

THE KANSAS CITY VETERINARY COLLEGE held its annual commencement exercises on March 13 last, in the auditorium of the College Building, it was a most enjoyable occasion, and a large attendance.

RUSSIA participates in the International Hygiene Exhibition, Dresden, 1911. The Russian Duma has appropriated the sum of 102,000 roubles for the Russian Department of the International Hygiene Exhibition, Dresden, 1911.

THE INDIANA VETERINARY COLLEGE ASSOCIATION held its fourteenth annual meeting in the College Building, Indianapolis, on April 1. After the usual routine of business, which terminated with the election of officers for the ensuing year, a literary program on up-to-date therapeutics was indulged in.

DR. HORACE B. F. JERVIS writes from Oxford Rectory, Suffolk, England, under date of April 6, requesting his future numbers of the REVIEW to be sent to his home address, Houlton, Maine, and states that he has had a great course under Sir John McFadyean. He adds that the REVIEW has been a most welcome visitor while abroad.

DR. J. F. WINCHESTER, Lawrence, Mass., gave an address on "Tuberculosis, Its Cause and Its Cure," at the Riverside Congregational Church of that place, on April 25. The address was given in connection with the anti-tuberculosis campaign being waged in that city, and was interesting and instructive. The doctor had a large and very attentive audience.

AMERICAN VETERINARY REVIEW.

JUNE, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, April 15, 1910.

A LITTLE ABOUT ANAPHYLAXY. Anaphylaxy is one of the most interesting subjects which occupies at present the attention of experimental physiopathologists and of bacteriologists; and the pamphlet published by Dr. P. F. Armand Delille, in *L'Œuvre Médico-Chirurgicale* is indeed coming out at the proper moment, presenting as it does the subject in a very concise manner.

The name of *anaphylaxy* was created by Charles Richet in 1902. It applies to the state of specific vulnerability that an organism may acquire with a second inoculation of some organic substance, which at the first injection had been indifferent or only slightly toxic.

Let us glance briefly into the history of the question. In 1902 Charles Richet, while studying the properties of actinotoxine (a poison extracted from the tentacles of actinæ), had observed that if, after injecting a dog with a given dose (not deadly) of this poison and when he had returned to perfect health, say three weeks later, a second injection smaller than the first was made, death of the animal would follow very rapidly. Instead of being strengthened, the organism then had become more sensible to the toxic substance, which was possessed of a

special anaphylactic property and consequently, concluded Richet, the acquired hypersensibility of the organism for this poison could be called *anaphylaxy*, a name now consecrated by use.

But to this discovery of Richet, others were soon added. First came the facts observed by Arthus. It is known that the injection of horse serum is not at all toxic to healthy rabbits, and that 10 c.c. of it can be injected under the skin or in the peritoneum of this animal without giving rise to any accident. But, and here comes the discovery of Arthus, if at intervals of several days, repeated injections of 5 c.c. of this serum are made, it will soon be observed that the injection began to give rise to a local swelling at the point of inoculation, which will become more serious as new injections will take place and after, say, the fifth or sixth may be followed by gangrene and necrosis. If the injections are continued, when the animal will have received six or eight and if instead of making them subcutaneously they are thrown in the general circulation by one vein of the ear, death will take place in a few minutes with the intravascular injection of only 2 c.c. Sometimes there will only be acute convulsions and the animal may live for a few weeks after. For Arthus these results are analogous to the anaphylaxy of Richet.

And then came the observations of Von Pirquet and Schick, who had noticed that while some poisons, virus and organic serum, require to produce their toxic effects, a defined period of incubation, which seems to be in proportion with the modifications of their toxic elements by the organisms, it is to be observed in relation to a second inoculation of those substances, made after a certain length of time, that the period of incubation is much shorter; and besides, that the toxic effects are sometimes much more severe.

Since these discoveries researches have been started everywhere and experimental anaphylaxy has been for many a great field to work upon so as to arrive at a practical application in pathology of the reactions observed and to a better explanation of pathological manifestations which may be found by the

anaphylactic state. The serum disease, reactions of tuberculin, alimentary intoxication by fishes, molluscs, etc., idiosyncrasies to eggs, to milk, etc., etc., are among those.

* * *

As the results of the many experiments made and facts observed, the phenomena of anaphylaxy are beginning to be better understood and described, but yet there are many that still remain obscure and upon which we have up to this day no experimental notion. The theories advanced to explain them are still far from allowing a complete satisfaction for the mind of the inquirer. These theories are numerous and among them four principal ones prevail.

That of Richet, who admits that the organism acquires anaphylaxy when it is placed in such condition that by a small dose, not deadly, of the injected poison, it can give rise to the formation of a new product, which requires for its production a period of 12 or 18 days. This product Richet calls *toxogenine*. When a second dose of poison is introduced into the organism it meets with the toxogenine which, uniting with it, produces a new poison, *apotoxine*, of an absolutely different nature and constitution from that of the poison introduced in the first and second injection, as it kills when given in proper condition with a symptomatology entirely different from that which characterizes the action of the poison itself.

Von Pirquet and Schick have tried to explain anaphylactic manifestations with the anticorps theory of Ehrlich. For them the introduction of a foreign body, toxic or not, acting as antigene, gives rise to the formation of anticorps, whose elaboration requires a certain duration of 10 or 12 days. If after that period, which corresponds about with the disparition of the antigene, another antigene is introduced, there takes place in the organism a sudden union between the anticorps and the antigene, which is manifested by the symptomatology of anaphylactic accidents.

In his theory for Nicolle the introduction of any antigene (cell, microbe or toxine) in a foreign organism, gives rise to the formation of two kinds of anticorps, some coagulating, others decoagulating or lytic, to which he gives, according to the antigene injected, the name of cyto-coaguline and cytolysine, of bacterio-agglutinine and bacterio-lysine, of toxino-coaguline and toxino-lysines. According to the predominance of the coagulines and of the lysines, phenomena of immunity or of hypersensibility are presented.

And finally in the theory of Besredka the injection of a small quantity of antigene gives rise to the production of a specific anticorps which he calls *sensibilisine*. This sensibilisine to develop itself requires a certain length of time; in average ten or twelve days, according to the animal. This sensibilisine fixes itself upon the nervous system, impregnates it in such a manner that after the introduction of a new dose of antigene the anaphylactic effects take place.

After all, all these theories are yet leaving the inquirer in doubt and it is for that reason that Dr. Armand Delille concludes his pamphlet in saying "Taking in consideration clinical and experimental facts, one may recognize that there exists a certain number of substances of organic origin which, introduced a first time in the organism in not nocive dose, have the property of producing in said organism, after a defined length of time, a state of anaphylaxy; that is, an excessive sensibility towards reduced doses of the same substance which gives rise to no disturbance in a new organism. This state of anaphylaxy seems to be connected with the development in the organism of special bodies or properties which exist among others in the serum of blood, as long as, by the introduction of this serum in another individual of the same specie, this individual is immediately placed in a state of anaphylaxy."

Last conclusion: In the state of science, it is difficult to formulate an absolutely satisfactory theory to explain the phenomenas of anaphylaxy. Yet one is authorized to think that there results after the anaphylactizing injection, elaboration of

an anticorps which has the property, by its action upon the injected antigene, to remove its toxicity, concealed or counter-balanced by other substances introduced in the same time as it was.

Let us wait for more light on the subject, and yet benefit by what we know of it.

* * *

THE VETERINARIAN'S RESPONSIBILITIES.—When only acting as physician, the veterinarian's responsibilities are merely of a self-moral nature, as it is not likely that, except under very exceptional circumstances, suits before a court of law would have to be defended by him, because of an improper treatment or of mistake in such. It is not so, however, when his services are those pertaining to surgery, for which peculiar conditions may present themselves in which carelessness, errors or improper manipulations may have resulted in detriments of various nature towards the owner of an animal.

Of course in every country there are laws which have for their object the protection of those that may be actors on such occasions. There are laws which will protect the owner, and others which also defend the surgeon. Laws which tell what carelessness, errors or improper manipulations (or in other words, "big manifest negligence") are, and they bind the surgeon to not fall into them under stated penalties. But are these laws perfect, and can they find their application in every instance? These are questions which may not be answered favorably in all cases and for which undoubtedly the surgeon may have, or must take, special measures, by special understanding with the owner of the animal which is to be submitted to an operation.

For instance. Many years ago when casting tables were not invented, a veterinarian that some among us may remember, had to throw a horse for firing a hock. The horse broke his back. An accident resulting from the improper or rather careless manipulations of the surgeon. He had to pay a large amount.

Was he really at fault? Yes, if not entirely from lack of attention to his patient (although it was not perfect), because the owner had not been aware of the possibility of the accident and had not been acquainted with the necessity for casting the horse. I believe these were the facts. The professional results were that from that day no veterinarian threw a horse down unless the owner was notified of the risks, that he gave his consent, assuming all the chances; of course with the proviso that the surgeon would take all the necessary precautions which were then known against the possibility of an accident.

If the law in this case did protect the owner, it had also a very good effect on the surgeon; who learned how to protect himself. I do not know positively, but I feel pretty certain that even to-day the veterinarian who has not the use of a casting table will protect himself as they did in the days I refer to. It is true that the accident is very rare, but as long as it may take place and that difficulties at law may be the consequences, let him protect himself.

* * *

This question of responsibility has also been considered some time ago in the *Deutsche Tierärztliche Wochenschrift* and recorded in the *Revue Générale* under the heading of *Is a Veterinarian Obligated to Resort to Antiseptic Treatment of Wounds?*

A German veterinarian was called to treat an animal for a wound of the foot, but the patient was so nervous that all interference was impossible and it was necessary to cast him after giving him an intravenous injection of chloral. This was made in the jugular with a syringe carrying a rubber tube attached to a glass funnel. Everything had been minutiously cleaned, but the skin was not disinfected. The operation was a success. The horse got up and was taken to his stall. In the evening, however, an enormous swelling had taken place all over the neck, asphyxia was threatening and temporary tracheotomy had to be performed at once. Yet the horse died after three days.

Then the owner started a suit for damages against the practitioner, claiming that the horse had died from blood poisoning because the skin had not been disinfected before the operation and before the injection of chloral. Fortunately the post mortem had not been made and the cause of death could not be established and still less the proof of the professional fault of the veterinarian. Consulted in relation to the above on the question, "Is a Veterinarian Obligated to Resort to the Antiseptic Treatment of Wounds?" Professor Frick, of Hanover, took the practical point of view of the question and stated that often "we are building illusions on the cause of the recovery of a patient and that we attribute its merits to the antiseptic measures that we have used, and again that it happens that with the most minutious attentions, we are unable to avoid a complication. It is proper to leave the practitioner judge what he ought to do and to bear in mind that in case of law suits, it is always an obligation to prove that 'gross manifest negligence' has been committed which will be many times impossible to do."

However, this case reminds us of one which occurred in our own hands. Called at night to a case of colic, we made subcutaneous injection of morphine. Forty-eight hours after the horse had an acute attack of tetanus which carried him off in short time. Fortunately antiseptic precautions were not known in those days or perhaps we would have had a case similar to that of the German veterinarian.

Antitetanic serum was not known either.

If it had been evidently we would not have resorted to it for a prick from a Pravaz's syringe. And yet, now that the use of this serum is so common, can there not be occasion where the responsibility of the practitioner may be engaged, should its use have been omitted?

The question has almost been positively put and discussed at one of the seatings of the *Societe Centrale* of Paris. It was brought about as a sequele to a report made by one of the members upon a paper relating to the question I have alluded to some time ago, namely, the necessity of one or more injections of

antitetanic serum in some stated operations; principally that of castration. In the report that subject was treated and to strengthen the point the opinion of a magistrate of renown had been asked for, given and mentioned, in which the conclusions were that the responsibility rested with the careless surgeon for not using it, and therefore for the right of the owner to sue for damages in case of accident, conclusions that could not be entertained.

The use of antitetanic serum is not obligatory and must be left to the judgment of the surgeon. Leaving the question aside of whether or not the fact of its use might not be considered as a scientific progress and therefore obligatory in some light, the probable and sure way to avoid trouble is to resort to the measure indicated in the case mentioned at the beginning of this article, namely, suggest its use to the owner and if declined let him assume all the risks. This would seem the safer and business-like manner. Anyhow it would relieve the veterinarian of all responsibility.

* * *

SIGN OF STRAUSS AND VAGINALITIS IN EXPERIMENTAL DIAGNOSIS.—The conclusions to be drawn from the indications obtained by the inoculations of glanders virus in the peritoneum of Guinea pigs are well known and the method is of daily practice for the diagnosis of glanders. The orchitis that develops has been first and for a long time considered as essentially pathognomonic of the existence of glanders until other experiments had come to show that this orchitis was not only a manifestation of glanders, but that other microbes would give rise to the same pathological manifestation.

Indeed, many experimenters have inoculated in the peritoneum of male Guinea pigs the virus of tuberculosis and with them the existence of the vaginalitis followed the inoculation.

Prof. Panisset experimenting in the same direction injected in the peritoneum of Guinea pigs human tuberculous bacillus and also found at post mortem of the animals that died with

tuberculosis that there were miliary tuberculous deposits on the testicular muscles, on the testicles and on the epididymis. And from these results the question presented itself to his mind: Has the bacillus of Koch a specific affinity for the vaginal sheath of the male Guinea pig?

He inoculated Guinea pigs in the peritoneum with very weak doses of virulent human bacillus and found vagino-scrotal lesions perfectly typical. With one 1,000th of milligramm of fresh bacillus, a Guinea pig died in 75 days and presented at post mortem besides the pulmonary lesions, grey and yellow miliary tubercles on the testicular muscles, the testicles and epididymis with also some in the adipose tissue. With one 10,000th and even one 100,000th of a milligram Panisset realized the same lesions. In following, during life, the development of these lesions, one can quite easily perceive the fine granulations developing on the testicles and testicular muscles. And the atrophy of the testicular structure is readily noticed. It becomes harder. One or the other of the testicles, or sometimes both, become firmly attached by adhesences which take place between the layers of the serous membrane and a time soon occurs when the organs can no longer be moved up and down nor pressed back into the abdomen. In using pus taken from bovine tuberculosis or from lesions obtained on Guinea pigs, similar conditions were also observed during life or at post mortem. But in three cases out of eight there was besides, a true orchitis.

This localization of the manifestations upon the testicular serous membrane has some importance to the point of view of the diagnosis of glanders. Pulmonary tuberculosis in horses assumes atypical forms, glanders and tuberculosis may both exist in one animal and in those cases, indications given by a male Guinea pig might give rise to errors if the experimenter had only noticed the presence of the testicular swelling.

Panisset recalls a case where orchitis had been noticed as the result of inoculation made in the peritoneum of three Guinea pigs, with pulmonary lesions obtained from a horse which had given a doubtful reaction to mallein. When Nocard was con-

sulted, he pronounced the case to be one of tuberculosis and not one of glanders. Such error may occur again and in the presence of the reaction of Strauss, it can be avoided only by the bacteriological examination of the lesions.

These interesting experiments of Panisset have lately been confirmed by those of Prof. Basset who relates them at the *Societe Centrale* of Paris. He inoculated pleuritic exudate of tuberculous animals in the peritoneum of male Guinea pigs. One month after he found the testicles completely immobilized, and when the animals died with generalized tuberculosis he observed that the vaginal cavity had disappeared and that their layers were firmly united by a sheath of fibrous tissue. Basset also concludes that many are the microbes which, when injected in the same manner, will show an elective capacity more or less marked, for the vaginal serous membrane, that the bacillus of Koch is one of those, and that the sign of Strauss must be accepted with certain circumscription. In such experimental diagnosis symptoms and lesions must, of course, be taken into consideration; but to those, bacteriological examination, if it does not impose itself, it at least ought to be added.

* * *

HOW MUCH BLOOD CAN BE TAKEN FROM A HORSE?—It has been related some time ago by the distinguished veterinarian, Mr. Prevot, who has charge at the French Pasteur Institute of the Department for the preparation of serums. The very curious observations that he presented, give an idea of what answer the heading of this note demands. The figures are certainly surprising and at least unexpected. Here, for instance, there is a horse which, since March, 1897, has furnished 2,038 litres of blood. Eleven years old when he entered the service he is now 23 years old, he has given *four* times his weight in blood and appears not the least disturbed by the removal of such quantity of his circulating fluid. Another horse, that died at the age of 28 years, has given, during his stay at the Institute, 2,600 litres of blood.

As he weighed only 425 kilograms, he has furnished *six* times his own weight of blood.

These repeated bleedings, says Mr. Drouin in his report upon the statements of Mr. Prevot, do not interfere at all with the increase in the weight of the animal. One horse which weighed 480 kilogramms in 1902 when 9 years old and which actually weighs 536 kilogramms although he has already furnished 836 litres of blood. Another, aged 8 years, when he entered the Institute in 1902 weighed 435 kilogramms, since he has had 782 litres of blood taken from him and yet he has gained 81 kilogramms in flesh, weighing 516 kilogramms.

Sometimes the quantities of blood extracted went beyond the adopted limits, for one reason or another, and one case is mentioned when an average of one litre per day was taken from one horse, 246 litres being drawn from him between February 10 and November 26. But all the horses of the Institute are submitted to large periodical bleedings and the number is no longer counted of those which have given 1,000 litres of blood. What wonderful power, continues Mr. Drouin, must a healthy organism possess to repair such losses of blood! What can remain after all those venesections of the primitive mass of blood? The animal must have an entirely new supply of blood.

In his article, Prevot mentions that most of the horses used for the preparation of serum die late; specially if they can resist the first venesections. At any rate, it results from all these observations, that bleeding is comparatively harmless, and that if we wish to lower the blood pressure to avoid internal hemorrhage or to remove from the organism products of microbial intoxication the veterinarians do not need to hesitate in resorting to it. If it has not been absolutely necessary, nothing serious will result from it as the new blood will soon have taken the place of the one removed.

Many of the facts related above may have already been observed, but with all that their publication cannot fail but be interesting.

ADRENALINE—ITS USES AND INDICATIONS.—Prof. K. Winslow in the last edition of his excellent work on Veterinary Materia Medica and Therapeutics has presented to his readers in the chapter on Medicinal Agents of animal origin, a very good history of Adrenaline. In the revised edition of his work Prof. Kaufmann relates amongst the physiological effects one of interest which I have not seen mentioned in Winslow. I hope he will permit me to refer to it.

Kaufmann says: "Besides vasoconstriction and anesthetic effects the subcutaneous injection of a solution at I p 1,000 will in the horse, give rise to a very peculiar symptom: viz., the apparition of a local sudation which remains exclusively along the lymphatic blood vessels, rendering their course most evident and leaving the intervals between the lymphatics dry. This sudation appears about one hour after the injection and lasts several hours. The next day and several after, the marks of this sudation remain indicated on the hairs which have an aspect different from those of surrounding parts and which cannot be removed at once by brushing or with the use of the curry comb."

In relation to the administration of adrenaline, Prof. Josué in the *Presse Medicale* remarks: The way to introduce this drug is essential to bear in mind. It must not be injected in veins, the lungs or the trachea; as experimentally, it has been followed with acute pulmonary oedema and death with even relatively small doses. Exception may be made, however, for cases of imminent death from operative shock or cardiac asthenia. Injected in the subcutaneous tissue it is less toxic and then does not produce the arterial lesions of atheroma as when used with animals of experiments when it is given in the veins. Accidents of intoxication are still less frequent when the drug is given per oris. According to Josué, adrenaline can be given for a long time, two years in one recorded case.

At any rate, it is pretty certain that so far adrenaline applications need yet confirmation and that they remain under the dependency of three special and essential pharmacodynamic properties. One degree an hypertensive vaso-constrictive action, 2

degrees an assisting action to the surrenal secretion, 3 degrees a strengthening action towards that of the alkaloids.

The posology of adrenaline is also still the subject of controversy, and speaking of it, Dr. Martinet says that to it an old saying can be well applied: NOT TOO MUCH, NOT TOO LITTLE, NOT TOO OFTEN AND NOT TOO LONG.

Not too much as its peculiarly active substance may, in high doses promote alarming symptoms, even if they soon pass off.

Not too little, as its effects are then absent.

Not too long nor too often as it is eliminated very slow and its administration may bring about accidents of intolerance due to accumulation.

Probably in veterinary medicine, the benefits gained by the use of adrenaline will remain principally with external use as demonstrated by the experiments of Prof. Dupuy and Van den Eckhout, of Bruxelles.

* * *

BIBLIOGRAPHIC NOTICES.—Among the communications that I have received lately either as exchanges, complimentary or others, I find some which are deserving considerable attention. For instance, the January number of the *Agricultural Journal of the Cape of Good Hope* contains some remarks from R. W. Dixon, M.R.C.V.S., on *East Coast Fever* or *Rhodesian Red-water*, *Tropical Piroplasmosis*; and from Director W. Robertson, M.R.C.V.S., *Notes on Some Diseases of Ostriches*.

These articles are for general information, it is true, addressed to farmers, stock and ostrich raisers, but they are nevertheless very instructive, and while one would like to find in them perhaps a little more strictly scientific and complete information, these are yet of valuable importance and just for the object they have in view.

The part of the article of Director Robertson referring to paralysis of the limbs of ostriches is very interesting. "The disease is sudden in onset. * * * Birds are suddenly affected, principally young birds. * * * Some are suddenly

affected quite yellow with fat, and in the pick of condition. * * * There seems to be a complete absence of pain. * * * At first the animal makes strenuous and constant efforts to rise, but in a few days gives up the attempt. * * * They may live for months without improving. * * *

The illustrations that are reproduced are very suggestive of the symptoms and condition presented by the birds. In the article referred to a few cases are described and also the post mortem.



FIG. 1.—Showing Ostrich affected with paralysis attempting to rise.

Inquiries into the pathogeny of the disease have brought out the facts that there has always been found in the inflamed membrane of the bowels, a short bacillus, fairly regular in shape, stained by the ordinary aniline dyes and not by the Gram. Ex-

periments of inoculation of bouillons of cultures of this bacillus; "most certainly the casual agent of the disease" have resulted in giving rise to symptoms similar to those of the original affection. According to Director Robertson, the symptoms ob-



FIG. 2.—Ostrich Chick affected with paralysis attempting to crawl about on its hocks. Note the contracted condition of the toes.

served in paralysis of ostriches point more to a toxine poisoning than to anything else. The poison elaborated being in the intestines and by its action on the spinal cord, would give rise to the nervous paralytic manifestations. The only source of infection, however, is not only due to contaminated food and water. But he strongly recommends to have all diseased animals immediately killed and buried deeply and all the others to be taken to other fields and be hand fed with cut green crops.



FIG. 3.—Bird in last stage; note the closed eye.
(This was a sitting bird.)



FIG. 4.—Showing position assumed by sick bird in last stages.

The illustrations taken from the *Agricultural Journal* may prove interesting.

In the same number Prof. J. D. F. Gilchrist continues his valuable contribution to popular information on *Agricultural Zoology*, and Dr. Walter Jowett, F.R.C.V.S., D.V.H., gives the history and description of an intestinal parasite of ostriches, a *sclerostoma*, a number of which had been found in the cœca and terminal portion of the small intestines of a bird.

A. L.

* * *

THE TRIP TO THE COAST.

The great trip to the Pacific is gradually taking form through the combined efforts of the secretary of the A. V. M. A., the local committee of arrangements, and members throughout the country, who are expressing their interest in the success of this great undertaking by kindly and timely suggestions. Success is assured because of the fact that harmony prevails; and even now, in the month of June, the project has taken a tangible form, so that A. V. M. A. members can picture the route to themselves, the time it will require, and the amount of expenditure necessary. In our May issue, through the chairman of the entertainment committee, we were able to publish the headquarters and hotel arrangement, including rates; through the secretary of the A. V. M. A. we were able to furnish our readers with an outline of the trip and the cost from Chicago to the coast. Since then, the veterinarians of Chicago have convened for the sole purpose of signifying their intention to attend the San Francisco meeting (and Chicago does not do things by halves), and to discuss the plan of leaving their city by special cars or by a special train, and considered the advisability of having *two* such cars or trains; one leaving a week earlier than the other for the benefit of those who may desire to spend an extra week in sight-seeing en route, as explained by Dr. Merillat on page 381 of this issue. Dr. Cooley, evidently with a similar thought in mind,

offers some suggestions for the consideration of his brother members on page 382. Dr. A. D. Knowles held out the charm of the Yellowstone National Park as of especial value and interest as a side-trip in the May REVIEW. Those favoring that or some other side trip would be able to accomplish it by taking the earlier train proposed by Dr. Merillat. Again, away up in the Northwest, at Spokane, Dr. Nelson, chairman of the transportation committee, has been working up some plans that, we believe, will appeal to the majority. These plans will give the conventionists an opportunity for a break in the journey filled with interest, that will not necessitate the earlier train to accomplish it, but can be nicely achieved by leaving Chicago on August 31. This arrangement plans to make the members of the party going by that train (called the "AMERICAN VETERINARY SPECIAL") guests of the Veterinary Pacific Northwest, during their trip through the Northwest, guests of the Chamber of Commerce of Spokane from noon till 8 p. m. on September 2, and guests of the Seattle Chamber of Commerce for ten hours on September 3; finally arriving at San Francisco at 10 a. m. on the morning of the 5th. Spokane and Seattle are sufficiently far west, and otherwise interesting, to make them appeal to those going not only from the Eastern, but also from the Middle Western States; and for that reason promises to make the "AMERICAN VETERINARY SPECIAL" popular.

The REVIEW has encouraged free expression from A. V. M. A. members through its columns, believing it to be an aid to those upon whom the colossal task has fallen of perfecting the arrangements of transferring them across the continent in the pleasantest and most profitable manner, and feel sure that Secretary Lyman and the local committee of arrangements have been grateful for the suggestions and interest manifested by the members, and are still open for more of them. Perhaps, in addition to those who desire to go and return in as short a time as possible, and those that may desire to start a week earlier and go through the Yellowstone, etc., there may be still others who would like to spend some extra time in sightseeing returning.

Such being the case, it might be possible to arrange with the railroads for "stop-over privileges" returning. Any further suggestions should be made *at once* for publication in our July number, as *final* arrangements will be published in the August REVIEW.

* * *

PROFESSOR BUTLER'S TALK WITH THE YOUNG GRADUATE.—When our May number of *The American Journal of Clinical Medicine* reached our desk, we were attracted by the picture of the infantile *medicus* that adorns its front cover page; and on closer inspection noted the designation, "New Graduates' Number," and were curious to see the contents, but were not to be satisfied at the time owing to duties that prevented our so much as opening the book then. More than a week later our still unsatisfied curiosity prompted us to put the book in our pocket when starting on a professional call. We do not ask commendation for our powers of resistance, for we were not aware until then of the splendid article the number contained from the pen of Professor George F. Butler, of the Chicago College of Medicine and Surgery, entitled, "A Talk With the Young Graduate." The advice, encouragement and common sense offered to the young men of the profession in that article are an inspiration to anyone whose good fortune it is to read it, and we wish every young graduate in *veterinary* medicine as well, and old practitioners, too, could enjoy the privilege that we have enjoyed in perusing those pages. "The Young Doctor" is also treated editorially in the same number, in addition to an article entitled "The New Doctor's Opportunity," by Dr. Abbott. In fact the May number is an especially "meaty" one all through. The June issue will be a special tuberculosis number.

* * *

CONDITION COUNTS.—While the *Journal of the United States Cavalry Association* is always interesting, the May number is especially so, and contains many articles of interest to

veterinarians; notably among them, one entitled "Condition Counts," by Veterinarian R. Vans Agnew, Fifth Cavalry. The article shows that the doctor is very much interested in the problem of properly caring for and feeding cavalry horses, and is well versed on the subject, not alone of the care of horses, but of the several food-stuffs used as forage.

It is interesting and instructive; and suggests a considerable amount of study and thought by the author, who urges the broadening of the veterinarian's field in the army, as is the tendency elsewhere, making him rather a preserver of health than a mere prescriber for ailments, and justly maintains that he should be an inspector of all food-stuffs consumed by the army horses, as well as of the meat consumed by the men.

MR. R. M. LOGAN, District Attorney of Delta County, Colorado, on May 5, tried the first case under the new law regulating veterinary practice in that state. The defendant, a non-graduate, who had not made any effort to comply with the law as a "non-graduate practitioner," was ordered either to stop practising or take the next examination in June. Failing to pass said examination, he must cease practising in the state.

TUBERCULOSIS FROM COWS.—Prof. Von Behring is vindicated, Prof. Koch is brought to confusion, by the report of an investigation conducted by the officers of the Research Laboratory in the Department of Health of this city. Prof. Koch, who discovered the tubercle bacillus, has maintained that human beings are never infected from the milk or butter of cows afflicted with tuberculosis. Von Behring, on the other hand, has strenuously maintained that this is one of the chief causes of infection of human infants. It is not the chief cause, but, as Dr. William H. Park reported to the Congress of Physicians at Washington last week, bacilli of the bovine type were found in nine out of fifty-four cases in children over 5 and under 16 years of age, one of which was fatal. In children under 5 years, of eighty-four cases, twenty-two were of the bovine type, and nine of these were fatal cases. Dr. Park estimates that about 10 per cent. of all children dying of tuberculosis in infancy die from milk infection. * * *—(*New York Times*.)

ORIGINAL ARTICLES.

FUNDAMENTALS OF GOOD STATE WORK WITH INFECTIOUS DISEASES OF DOMESTIC ANIMALS.*

BY M. H. REYNOLDS, UNIVERSITY OF MINNESOTA AND STATE LIVE STOCK
SANITARY BOARD.

I can conceive of but two reasons for the existence of any live stock sanitary board or the office of state veterinarian. Clearly we have the protection of human health against transmissible diseases of live stock and the protection of our live stock from disease and loss that may be prevented by intelligent sanitation. What else—what other justification for such board or office. But granting that either or both subjects are or may be attained, then we have an important work.

I know that this work is important. Stock owners know in a general way that this work is important. No one will deny that live stock sanitary control work is important, but sometimes it is worth while to ponder over things which we already know.

It is impossible to put into reliable figures an estimate of the value to this country of federal work which but a few years ago eradicated foot and mouth disease after it had become rather widely spread in our New England states or the work which more recently eradicated foot and mouth disease from four states.

Who can estimate and place in figures the dollars and cents value for the present and indefinite future of the work which eradicated some years ago pleuro-pneumonia from the cattle herds

*Address before the Michigan Live Stock Breeders' Association, January 13, 1909.

of the United States. Important discoveries in connection with the cause of Texas Fever and the splendid work with this disease now under way in our southern states illustrate well the possibilities of usefulness that lie in sanitary control work.

You have no reliable figures upon which to base an estimate upon the annual losses from hog cholera in the United States, but such figures if they could be given would prove startling. We have lost within a single year in Minnesota from hog cholera—one disease of one kind of stock—not far from \$1,250,000. Suppose, just suppose that it cost twenty or thirty or forty millions to eradicate hog cholera from the United States, the amount would be trivial in comparison with the savings through a long term of years.

Losses from carcasses condemned on account of tuberculosis at our great packing houses and from carcasses of hogs that are being condemned at these places, have within a few years become a matter of such importance that packers are seriously considering the question as to what can be done about it. Very recently an International Commission consisting of twelve members representing breeders, packers, veterinarians engaged in state and provincial work with bacteriologists and experts engaged in federal and dominion service had its first meeting at Buffalo, N. Y. This commission has for its duty careful study of the great problem of controlling tuberculosis among domestic animals. This commission may be compelled to continue in service for several years in order to accomplish actual results, so difficult and so important is this one live stock sanitary problem considered.

We are to consider not only the matter of dollars and cents for owners. This question has a more important phase than in the relation of infectious diseases of domestic animals to disease of the human being. Many of our best authorities now agree that the infection of human tuberculosis is frequently received through the digestive tract and that an important percentage of these cases comes by infection of the child, or even older persons, through contaminated bovine milk. Plainly this work is worthy of our earnest consideration.

STATE WORK.

History.—Safe development of a state live stock sanitary board work is well illustrated by Minnesota's experience. Our progress as a working machine has been a process of evolution. In 1897 the writer was made a member of the State Board of Health, previously composed entirely of practitioners of human medicine. Soon after this innovation, we arranged for a committee on diseases of domestic animals. This later developed into a veterinary department of that board; funds for this work were increased and our live stock sanitary control work began to assume creditable proportions. Early in 1903 the veterinary control work was removed by legislation from the State Board of Health and given in charge of the present live stock sanitary board.

In order that I shall not be misunderstood, may I not explain that I am not now and have not been for several years in executive charge of the work, although a member of the board. Our Dr. Ward is executive officer. Please do not get the impression therefore that I am boasting of my own work.

I purpose to use Minnesota's organization as a text, or rather as an illustration to bring out principles and methods.

When this Minnesota work began in January, 1897, with the appointment of a veterinarian to membership on the State Board of Health, there was available for control work with infectious diseases of animals the sum of \$3,000 for the biennium. This has been gradually raised through twelve years to \$172,000.

Some of my hearers probably wonder what our board is doing with this sum of money and where the graft comes in. I can assure you that there is no graft about it, and no favorable opportunity for successful graft by those who control the fund; I will explain later in detail as to what we are doing with this money, and why there is no favorable opportunity for graft.

ORGANIZATION.

Concerning the organization, I may say that our board consists of five members appointed by the governor, a possible weak

spot. It is specified that three of these must be financially interested in the maintenance of live stock in our state, and that two members shall be competent and qualified veterinarians, graduates of recognized veterinary colleges. But one membership becomes vacant each year, so that there is no opportunity under ordinary conditions for sudden changes in membership and reversals of policies.

Board members do no field work and receive no compensation except traveling expenses to board meetings. I consider this one of the strong features of the Minnesota plan, and would not under any consideration approve a change which would provide the possibility of financial gain for board members.

The board meets quarterly for consideration of the work accomplished during the preceding quarter, to plan work for the future and to consider proposed regulations, amendments, etc.

From outside its membership the board selects a secretary, who is the executive officer to carry out work planned by the board or provided by law. He must be a graduate veterinarian and from a reputable veterinary college. This gives a single trained executive officer in authority for carrying out plans of the board and provisions of the law, but he does not originate important policies or issue formal regulations except as authorized by the board. The board also employs several field veterinarians on full time, a veterinary bacteriologist, and such other help as may be deemed expedient. These are not appointed by the board subject to approval of a governor; nor selected by any political boss, with a board compelled to accept.

The duty of the board is clearly and generously specified as follows:

* * * "The board shall protect the health of domestic animals of the state, and carry out the provisions of this chapter; employing such means and making such rules as it may deem expedient to that end."

The only source of failure which the writer can see for a board organized in this way would lie in sheer incompetence of board members.

And herein lies a principle that must be seen clearly and borne in mind, that no difference how perfect a machine may be in plan and proportion, it will fail if wrong material be used in its construction. Cast iron would make a very poor ax, even though the blade be of perfect shape and well fitted to the handle.

I offer two propositions here for your consideration: First, this work must be on stable footing for the future. It must not be built on present conditions that may be temporary. Our good sanitary organization must be as free as possible from political entanglement and be little affected by political changes; second, there is necessarily an intimate relation with more or less overlapping between agricultural college and experiment station work and sanitary control work.

If these two propositions be true, then some at least, possibly a majority of the board members should be there *ex-officio* to give stability and freedom from political entanglement. And the agricultural college and experiment station should be represented on the membership to secure harmony and unity of service in a common field, and to add in stability. But I do not believe it best or desirable for an agricultural college to do the direct executive work and have direct executive responsibility for this sanitary work except when political or other conditions make such arrangement imperative.

Future sanitary boards are going to need all the foundation and backing that can possibly be secured when they tackle the great problems of tuberculosis and hog cholera and glanders in earnest. So far, most state boards and state veterinarians have been only playing hide and seek with these problems of tremendous practical importance. To get this "all possible foundation and backing and stability," this breeders' association and perhaps your state dairy association or similar organization should each be represented *ex-officio* on the board membership by its most permanent officers and *ex-officio* members having taken seat should serve for at least a specified term. I regard this lack of stable *ex-officio* membership as a serious flaw in our Minnesota organization.

The Minnesota state board as thus far described, however, constitutes only a small central machine, for with this there are intimately associated under carefully worded provision of law about 2,500 local boards of health and health officers. It is expressly made the duty of local boards of health and health officers to co-operate with the live stock sanitary board. It will be seen that we thus have agents in every township, village, town and city of the state for whom the law specifies certain duties and who can be called upon by the state at any time for active assistance.

FEATURES OF THE LAW.

The state board, also the local board, with certain restrictions and within their respective jurisdictions, may quarantine or kill any domestic animal infected with or having been exposed to any infectious disease.

The law is explicit and severe concerning importation of stock contrary to law or rules of the board, and provides a penalty of \$500 to \$1,000 for each offense on the part of railroads.

It is the legal duty of *any person* who knows of or has reason to suspect the existence of any infectious disease in any domestic animal to notify the local board of health, and the latter within twenty-four hours must notify in writing the state board. Failure of either renders him liable to severe punishment.

In case of animals to be killed, the owner is given all reasonable protection in the way of protest, appraisal, etc., but protest does not delay the killing.

Tuberculous cattle or glandered horses are paid for when ordered killed, and when the killing has been done according to law, which is very explicit.

Appraisal limits for both horses and cattle are fixed. For cattle there is a certain limit provided for grade or what we would ordinarily call scrub stock, and another limit for pure bred and registered cattle.

Intimately associated with these features of Minnesota's laws are regulations authorized by that law.

Finally, legal penalties are sufficiently severe to prove fairly efficient.

METHODS.

I will have to omit most of the discussion which I had thought of giving in connection with methods and will only call attention to the fact that years of experience have brought us more and more firmly into the opinion that it is good control work to do a large part of the work directly out from a central office. To do this we use field veterinarians in direct employ of the state and on full time, rather than private practitioners as local assistants as in some states.

Good reasons for this view and policy may be easily given. Much of this work brings the doer into unpleasant relation with the owner. A man in employ of the state has no private practice to jeopardize and no friends to lose by going straight ahead and doing his duty. A man in the employ of the state who is constantly doing this kind of work and has perhaps had years of experience, can do it with less friction and even gain friends for our work where a less experienced practitioner would have trouble, make enemies for the board, and lose in his private practice. Men who are constantly at this kind of work become more familiar with a wider variety of infectious diseases than private practitioners who act occasionally as deputies on special call. Good men who are employed by the state on full time can make very much more thorough and competent investigation of an apparently new disease and make a very much more intelligent report concerning it than equally good men whose experience has been in the line of colics and spavins.

Our policy with *glanders* must be given rather briefly. The original information comes from a local veterinarian, health officer, owner, or neighbor. If investigation shows the presence of what we call clinical glanders, i. e., plain cases which may be recognized by careful examination, these are killed and exposed horses are tested. Horses which respond to mallein test and show any clinical symptoms are destroyed after appraisal. The

owner receives three-quarters of the appraisal, which is limited, and is paid by the state. Other horses which react to mallein, but do not show clinical symptoms are kept under a form of mild quarantine and subsequently retested.

We have had this plan on trial for a number of years. In fact Minnesota was the first public authority so far as the writer is able to learn to adopt the policy of testing all exposed horses with mallein. It has become a common policy. After years of experience we are unanimous and positive in the opinion that this is a wise procedure, and absolutely essential to any effective method of dealing with glanders. The question as to whether it is wise to quarantine horses which react, but show no clinical symptoms, may be debatable. The only satisfactory alternative appears to be that of killing all reactors with compensation for the owners. This would require large appropriations, and there are other rational arguments against the plan.

Our policy with *tuberculosis* is somewhat similar. When a herd of cattle has been tested and reactors are found, these are usually appraised at the owner's place and then shipped to some point where they may be slaughtered under government inspection. A considerable percentage of the carcasses are passed for food which results in a large saving for the state, inasmuch as the state pays the owner three-quarters of the difference between the appraisal and amount realized for the carcass.

Our work with *hog cholera* is along the lines of quarantine coupled with public education concerning the infectiousness, dissemination of the disease, and an endeavor to secure co-operation from owners, neighbors, and local health officers in matters of reporting, quarantine and intelligent use of hog cholera vaccine. It is little to the credit of veterinary sanitation in most states that hog cholera is ignored. Veterinary sanitarians have been operating too long on the weak idea that "we can do nothing with it; it's too big for us, and what is the use of trying."

May we close this discussion of organization and method by saying that a live stock sanitary board (or a state veterinarian) should not act like a spineless thing—a jelly fish, nor be a thorn

bush nor a mad dog running amuck. It should be considerate, firm, vigorous, and full of common sense in its method, with records always in good shape for defense.

FINANCES.

During the recent biennial period our board had the serious responsibility of administering a fund of \$172,000.

To present the economy with which this fund was handled and the general proportions of various expenses, I call your attention to the fact that during the fiscal year, August 1, 1906, to July 31, 1907, we expended a total of \$79,121.06. This particular year is taken because I happen to have the figures at hand. Any recent year would show about the same proportion.

Of this there was paid to owners of stock.....	\$63,409.29
Salaries of entire working force including executive officer, assistant secretary, field veterinarians, veterinary bacteriologists, etc.....	10,577.56
Traveling expenses of employes engaged in field work	3,894.90
Office expense and miscellaneous laboratory expense	701.76
Total paid the five board members for the year (Here is our answer to any suspicion of graft).....	138.65
Services of veterinarians not regularly employed....	398.90
	<hr/>
	\$79,121.06

During the current biennial period our fund will be used in similar proportion.

It is a matter of unanimous agreement among poultry men that a very good way to develop the ability to manage a large poultry plant successfully is to begin with a few old hens and develop experience and ability as the flock grows. Abundant experiences shows that this holds true with sanitary control work. I would call your attention to this connection that the present comfortable condition of our board finances of \$85,000 a year is not a matter of mushroom growth, but rather of slow development. Our funds have passed through an evolution from \$3,000 for

the biennium up to \$172,000 through a period of ten years' careful work. The increase has been gradual, which I think a decidedly safer procedure than large appropriations to inexperienced management. As the work grows there comes with it a very necessary experience in the way of administrative ability.

RESULTS.

I can easily imagine that my hearers are asking, Does the state of Minnesota get value received for the money? Well the live stock values we are trying to protect with these funds amount approximately to \$95,000,000. Let me call your attention to the fact that only a small portion of the result of any sanitary board of health officer's labors can be put into figures. . There can be no possible way of measuring or definitely stating the harm or loss that might have resulted, had not outbreaks been checked or threatening conditions promptly removed. The most important result accomplished are certainly the outbreaks of disease checked, financial losses averted, and human lives saved.

I will illustrate by a single point. We have had two demonstrated outbreaks of anthrax in Minnesota during recent years. In neither case was there spread of anthrax from the farms whereon the outbreaks appeared. In order to appreciate the significance of this it is necessary to understand the very serious problem which frequent and widespread outbreaks of anthrax develop in other states.

Our veterinarians for field work are as busy as men can be on inspection service or out visiting reported outbreaks of recognized diseases, or investigating reports concerning supposedly new diseases.

To present the matter of results in another way I would call your attention to the fact that there were tested for tuberculosis under the supervision of our board during the fiscal year 1907-1908, 27,216 cattle, of which there reacted 2,490 and were killed 2,368, found diseased 2,316.

Our figures for work with *glanders* show as follows: Number of horses tested with mallein during the year 1905-1906 were

3,322; killed, 606. In 1906-1907 there were tested 1,482 horses and 516 glandered horses were killed. In 1908-1909 there were found and killed but 363. Note the significant decline. During the four years 1905 to 1909, our men found and disposed of practically 2,000 glandered horses, and Minnesota horses were probably not a whit worse infected in 1905 than those of Michigan, Wisconsin, or any neighboring state.

During the fiscal year of 1906-1907 we paid to owners of horses and cattle the sum of \$63,409.

Continuing a study of results for the state's live stock interests, under this organization I find that the last government report, Bureau of Animal Industry (1905), in which distribution of states is given, shows that Minnesota was the largest user of government tuberculin, using approximately one-fourth of the total output in a list of thirty-three states for which report is made. This same report shows that we were using one-third of the total output of mallein for four times as much as any other state in a list of twenty states reported.

It is not that we have more of these diseases than other states, but rather less, and that Minnesota, through a good organization, has been making an active campaign against these diseases.

Practical farmers and stockmen should be interested first of all in results when considering this kind of work. Possibly I can help to make plainer still the fact that Minnesota is getting good returns on money invested in her live stock sanitary control work, and that she has economical and efficient service under this plan of organization. Experienced sanitarians well know that glanders is especially apt to be prevalent in large cities and in lumber camps. Taking St. Paul and Minneapolis, Secretary Ward's record for 1901 shows 40 horses killed for glanders in St. Paul, and 85 in Minneapolis; for 1904, 59 horses killed in St. Paul and 110 in Minneapolis (a marked increase due in part to thorough work and in part to unusual importation of diseased horses into the cities) and in 1906 a still further increase—71 in Minneapolis and 117 in St. Paul. In 1907 we succeeded in having the public watering fountains closed and our record for that year

shows a drop from 71 to 34 for Minneapolis in one year, and from 117 to 48 for St. Paul. In 1909 there were found but five glandered horses in St. Paul and six in Minneapolis.

Making a study of our records of glanders in lumber camps where the disease was formerly very prevalent, we find the number of glandered horses destroyed in these camps reduced in two years by 75 per cent. This was done by careful inspection of camps in the season when work was starting, followed by periodical inspection during the winter.

As showing the progress of public sentiment in regard to tubercular cattle and safe municipal milk supply, it may be interesting to note that Minnesota now has thirteen or more cities with ordinances requiring tuberculin test as a condition upon which license to sell milk in the city may be granted.

SUGGESTIONS.

There are numerous and large portions of the veterinary sanitary field which have been scarcely touched in any state work. The best work with hog cholera is yet crude and imperfect. The best state work with cattle mange and scab is not well organized and efficient. It has been altogether too much the custom for sanitary boards and state veterinarians to pay no attention to such diseases as hog cholera, and infectious abortion, because they present very difficult problems. We do not even know how swamp fever spreads.

Stockmen ought to be able to hope that hog cholera may soon be recognized as a disease which sanitary authorities both state and federal should deal with vigorously, and from which they may hope to secure satisfactory results. Any one at all familiar with this kind of work knows that the control of hog cholera must necessarily be very expensive work, i. e., expensive in total dollars used, but not necessarily expensive when the annual losses and volumes of business are considered.

Can there be any question but that the appropriations usually provided by states for veterinary sanitary control work have been inadequate and unwisely inadequate? Can there be reason-

able doubt that money intelligently used by an efficient sanitary machine is capable of bringing to the state an interest rarely earned by public investment.

Consider for a moment the entire live stock values of Michigan. What in proportion would an annual appropriation of \$50,000 a year be for your sanitary control work?

Perhaps some of my audience is still saying, "but how did you get so much money for this work in Minnesota; that is what we are anxious to know." Well, in the first place we have not "so much money." The total money appropriated for veterinary sanitary control work in Minnesota is not a large amount for the work. Our live stock interests amount to about \$95,000,000. Our appropriation is only .0007 of this amount of .07 of 1 per cent., and it is important to remember that our live stock interests are not the only ones affected by the prevalence of an infectious disease or even a threatening probability. Directly or indirectly all other financial interests of our state are involved, for animal husbandry is essential and fundamental in agriculture, and prosperous agriculture is an absolute essential underlying civilization.

An agricultural state can ill afford not to spend money generously to protect her live stock interests. Our appropriation is but a trifle in proportion to the interests which we are protecting with it.

But you are still saying, "yes, but how did you get the money?" The answer is simple. It has been a process of evolution. In order to secure large and increasing appropriations continued through any number of years it is absolutely necessary that the live stock sanitary authorities must do efficient and conscientious work. Funds must be handled with the most scrupulous honesty and managed so as to bring the best possible returns for the state making the investment. It is necessary for such authority to have the confidence and backing of live stock interests and veterinarians of the state. And it must be clear that large appropriations and important legislation are not for the board—clear that the board is merely an agent responsible for wise handling, and clear that funds and the benefit of what seems

strong legislation merely pass through the board to the live stock owner and a general public that is dependent on prosperous animal husbandry.

We ask the Minnesota legislature for money, showing proper account of just what we have done with our money in the past, and just what we expect to do with what we are asking for. We make it a point to secure the friendship and personal interest of each stock owner with whom we have dealings. We ask the legislature for money and our friends write in or telephone that the sanitary board must have its appropriation and that is all there is about it. We work hard and get our friends to work. You have the entire formula.

Following up now the preceding application of principle and method, let us summarize in a statement of fundamentals of good live stock sanitary control legislation.

STATEMENT OF FUNDAMENTALS.

Organization.—The controlling body should consist of five members. At least three of these members should be ex-officio, representing some of the following institutions: Agricultural College and Experiment Station, State Live Stock Breeders' Association, State Veterinary Association, State Dairy Association, etc. The other two members may be either ex-officio or appointed by the governor. The term of office should be five years, one term expiring each year. Three of the members should be directly interested in live stock. Two members should be graduate veterinarians.

Board members should receive no compensation except actual expense outlay.

Meetings of the board should usually be quarterly with provision for special meetings on proper call.

There should be close organic relations between local boards of health and health officers, and the State Live Stock Sanitary Board.

The executive officer of this board should be in fact an executive officer employed by the board and not a member.

Duty and Authority.—The essential duty and proper scope of this work is to protect the health of human beings from diseases of domestic animals and protect domestic animals from infectious diseases. The essential duty should be sanitary police work, not research. Board members should do no field work in person. The Board should have full and sole power to select, employ and dismiss all employees of the Board. It must have authority to inspect, to quarantine, to issue regulations, to kill animals under proper restrictions, and to prevent importation of infectious disease.

The state board should have authority to adopt and enforce needful and reasonable regulations, which should be as few and in as positive terms as possible.

Legitimate Use of Funds.—The use of board funds should be limited in use to protection of human health, control of infectious disease of animals, preventing importation of disease, compensation to owners for stock destroyed, and for restricted lines of investigational work with diseases of animals when the state has not already provision for such work in another institution.

Miscellaneous Features.—Report should be made to the governor annually or biennially. It should be incumbent upon any person who knows of infectious disease of live stock to report to the local health officers or to the state board.

Owners should be given all reasonable protection by privilege of protest, appraisal, and reimbursement under proper restrictions and for specified diseases, but protest should not be permitted to delay necessary sanitary measures.

A very large proportion of field work with infectious diseases of animals should be done by veterinarians employed on full time by the board and not by private veterinarians acting as deputies, except under rare conditions, when the work may be done as well and more economically by using local men.

The sale and use of tuberculin and mallein should be under proper legal restrictions to prevent fraud. The distribution of federal or state tuberculin should be entirely through the state board.

In control work with tuberculosis and glanders, all cattle and horses that have been seriously exposed to plain cases of the disease should be tested. Provisions should be made for securing full carcass salvage by having tubercular cattle killed under inspection.

There should be legal provision to prevent diseased stock from running at large. Sale or trade of stock that is diseased or suspected of infectious disease should not be permitted.

Penalties for owners, transportation companies and health officers should be severe enough to command respect. Expense of quarantine should be borne by the owner when stock is taken from his possession and at the owner's expense when it is left in his possession.

I believe that the state which can put these fundamentals into carefully worded law and regulations is going to be pretty safe in the future so far as infectious disease of live stock is concerned.

EXAMINATIONS TO BE HELD BY STATE VETERINARY MEDICAL EXAMINING BOARDS IN JUNE.

(As per advices received.)

COLORADO—June 3-4, Room 18, Capitol Building, Denver.

LOUISIANA—June 8-9, Baton Rouge. First day will be devoted to business session; the second to examinations.

NORTH CAROLINA—June 23, Monroe.

PENNSYLVANIA—June 20-21, 9 A. M., Room of Civil Service Commission, 8th floor west, City Hall, Philadelphia.

REUNION AFTER TEN YEARS.—The class of 1900, New York American Veterinary College, held a meeting in the college building in the afternoon of April 16 and a dinner in the evening, in accordance with a compact made on the day of their graduation, to meet and dine together every ten years.

The meeting consisted of roll-call, and each member present signing a certificate designed for each member of the class. The certificate to serve as a record of who was present. Those of the class present at this, their first reunion, were: Drs. C. E. C. Atkins, Bridgeport, Conn.; A. Eichhorn, Washington, D. C.; J. William Fink, N. J.; J. J. Hayes, Jr., New York, and W. Arthur Young, Utica, N. Y.

LIP-AND-LEG ULCERATION (NECROBACILLOSIS) ITS CAUSE AND TREATMENT.

BY JOHN R. MOHLER, V.M.D., WASHINGTON, D. C.

(Continued from the May Issue.)

CAUSE OF THE DISEASE.

There can be little doubt that the disease is primarily the result of abrasions of the skin and other tissues, allowing the access of the causal organism. The latter may be a natural habitant of certain localities or of certain vegetation. One factor that is predisposing in these cases is a prolonged drought which renders the feed scarce, inducing the sheep to browse on thistles and roughage which cause the necessary abrasions. In fact, it is frequently noted that after rains, with the consequent growth of luxuriant feed, the disease becomes checked and the affected animals rapidly recover. There seems to be some connection between dry weather, or rather very dry feed, and the appearance of the disease. While there are many factors in dry herbage liable to produce slight abrasions of the lips necessary for the entrance of germs, in succulent pastures there are few or none. However, such abrasions by themselves will not produce the disease, but when they become infected with the germs of necrosis, lip-and-leg ulceration follows. The necrosis bacillus, which is very widely distributed by nature, will not enter a healthy tissue, requiring, as it does, an abrasion, puncture, or wound through which to gain access. Of course a spine or prickle, if contaminated with these germs at the time of puncture, will act as a direct agent of introduction.

In order to obtain some information on the question as to whether the object making the abrasion is itself infected or if

the wounds made by noninfected bodies become contaminated subsequently to the injury, two specimens consisting of bunch grass and shad scale were examined and inoculated into experiment animals, but with negative results. Of course these findings are in no way conclusive, merely indicating that the infection was not present on the particular specimens examined. On the other hand, tags of wool examined and tested on animals in the same manner gave positive results in two instances. The manure of sheep was also examined to ascertain if, as in hog manure, the organism exists there normally, but in no instance was the bacillus observed. In order to prove or disprove a theory that had originated in one of the infected districts, a careful study of the foot lice of sheep was made in order to determine if they played any part in the transmission of the disease, but these results were likewise negative.

There are several conditions which are responsible as predisposing factors for infection by this organism.

1. Lambs often become affected with sore mouths by coming in contact with the infectious principle. Hard, dry scabs, warty in appearance, are produced frequently, covering the entire lips, and which upon being removed leave a raw, granulated surface with or without an exudate of pus. These lesions may be present in lambs before they are weaned, in those that have been weaned, or in lambs which are forced to the range for hard, dry feed after being on succulent forage. It is not, however, the feed or the pasture or the fact that they have just been weaned which of itself causes the lesions; but in addition to these predisposing causes, the necrosis bacillus becomes present and the disease continues to spread.

2. Sheep are sometimes forced to wade through alkali gumbo mud to reach water in the lakes and reservoirs when they become low. This mud becomes matted in the hair and wool of the legs, and becoming dried by the sun and winds may be rubbed off, pulling hair and skin with it, and thus opening the way for the entrance of the necrosis bacillus, followed by ulcerations on the legs.

3. In the winter time the tissues, especially of the legs and sheath, may become devitalized as a result of freezing or of frost bites, thus allowing the necrosis bacillus to gain lodgment and develop.

4. Injuries in the region of the legs and feet due to thistles, cacti, briars, bruises, etc., and wounds of the lips as a result of picking up harsh forage or frozen forage or in breaking through crusted snow for feed, provide favorable conditions for the entrance of the bacilli.

While recognizing the importance of the remote cause, it is to the proximal cause that we give credit for instituting the disease process under consideration. For instance, in lip-and-leg ulceration the proximal cause is the *Bacillus necrophorus*; the remote cause may be a puncture of the cactus. Note here that the proximal cause is invariable, the remote cause variable—for, instead of being the cactus, it may be a sharp-pointed particle of food. Again, the origin of necrotic quittor in the horse may be a nail in the foot, tread, scratches, etc. It is a variable source. But when by our investigation we find the necrosis bacillus associated with this process, we are warranted in laying hold of that micro-organism as the proximal cause—the cause which gives title to the disease process, or which, on the other hand, may receive its name from the disease. So in necrobacillosis of the intestines in calves. The immediate cause of the necrosis is the necrosis bacillus; the remote cause may be any bacterial agent capable of injuring the mucous membrane, or chemical effects connected with the feed—anything, for that matter, that could produce a catarrhal or eroded condition of the intestinal mucosa.

Lodgment in the tissues of the body of a susceptible animal is all the necrosis bacillus requires. Once this is secured where it may develop and throw out its deadly volatile toxin, all tissues with which it comes in contact become alike a prey to its necrosing action. As a result we may have necroses of the skin, muscle, hoof, cartilage, bones, mucous membrane, navel, and internal organs. In order to determine the presence or

absence of the necrosis bacilli in these tissues inoculation experiments furnish an important and definite aid in diagnosis. The tissue alteration in the rabbit after inoculation with this bacillus is so characteristic as to become an essential factor in the identification of the organism. Furthermore, the work of recovering the necrosis bacillus is much simplified by the injection of these animals, particularly if the bacilli are present in very small numbers in the specimen to be examined.^a

ECONOMIC IMPORTANCE OF THE DISEASE.

In considering the economic importance of this disease it is necessary to remember that many other infections are produced by this organism in many other species of animals, some of which are more grave than lip-and-leg ulceration. The presence of the latter disease on the range would indicate the possibility of the causative germ affecting other susceptible animals in any tissue in which it might find lodgment. Thus the importance of this organism is far beyond even its relation to lip-and-leg ulceration, since it affects calves, pigs, goats, adult cattle, horses, deer, rabbits, dogs, and chickens, and various forms of necrobacillosis may occur in these animals on premises contaminated with the infectious principle of this disease. Therefore, as a large majority of species of domestic animals are susceptible to this infection, and as a constant relation may exist between an attack of one form of necrobacillosis and the previous occurrence of another type of the infection in the same or another species of animal, it behooves one to prevent any susceptible animal of whatever species from coming in contact with a diseased one, or with such corrals, sheds, manure, and pastures as might be harborers of the contagion.

In whatever part of the animal body the *Bacillus necrophorus* may have instituted the inflammation which characterizes its

^a For a detailed study of the bacteriology and pathology of the *Bacillus necrophorus* the reader is referred to Bulletin 67 of the Bureau of Animal Industry, entitled "Necrotic Stomatitis, with Special Reference to its Occurrence in Calves (Calf Diphtheria) and Pigs (Sore Mouth)," and to Circular 91 of the same Bureau, entitled "*Bacillus necrophorus* and its Economic Importance," both publications by Mohler and Morse, of the Pathological Division.

presence, by whatever name the disease process may be called, be it foot rot, necrotic quittor, necrotic scratches, necrotic vaginitis or metritis, or necrotic stomatitis, there we find a hot-bed of infection and the certain groundwork of an enzootic. Hence, the occupancy of the calving stall by a cow affected with foot rot or by a cow suffering with a vaginitis dependent upon this bacillus is sufficient to insure the development of cases of necrobacillosis. The same principle is involved in the dissemination of the disease through one or more litters of pigs. The very first investigator in this line made the experiment of placing a healthy calf in a stall with two calves affected with sore mouth. The third calf came down in five days with the same malady. The author considered the calves' habit of licking one another as being chargeable with the transmission of the disease.

The proof of the transmissibility of the disease from one species to another was first secured by Dammann, who inoculated a bit of necrotic material from the mouth of a calf dead with the disease into the mouth of a four-day-old lamb. In four days the lamb died, with post-mortem findings which established the success of the experiment. Recent experiments conducted by the Bureau of Animal Industry have likewise shown that necrosis bacilli obtained from lesions of lip-and-leg ulceration will produce similar ulcers in hogs, horses, calves, and chickens which have been artificially infected by them. Moreover, cultures of the necrosis bacillus from warty lips of lambs produced ulcers on the penis of bucks, vulva or ewes, lips of old ewes (see Fig. 1), and between the claws of adult sheep. On the other hand, cultures from foot rot of sheep and from the testicle of a buck produced lesions on the lips and nostrils of lambs, while bacilli recovered from the liver of a cow caused ulceration on the lips and mouth of an adult sheep.^a

That this transmission of the *Bacillus necrophorus* from one species of animal to another occurs under natural conditions is

^a In these investigations the writer has been ably assisted by Dr. Jacob Traum, of the Pathological Division, to whom he extends thanks.

amply demonstrated not only by the observations and experiments of this Bureau, but also by the recorded cases of other observers, both American and foreign. Law, in his work on "Veterinary Medicine" (second edition, vol. 4, p. 691), maintains that such transmission is impossible, and also leaves the impression that this bacillus is not transmissible from one organ to another organ of the same species, but these statements are entirely contrary to the experience of those who have observed the disease. (See Figs. 6 and 7.)

On account of the possibility of the wide dissemination of this disease, the loss in condition of the affected animals, the stunting of growth or "setting" of the lambs, and the cost,

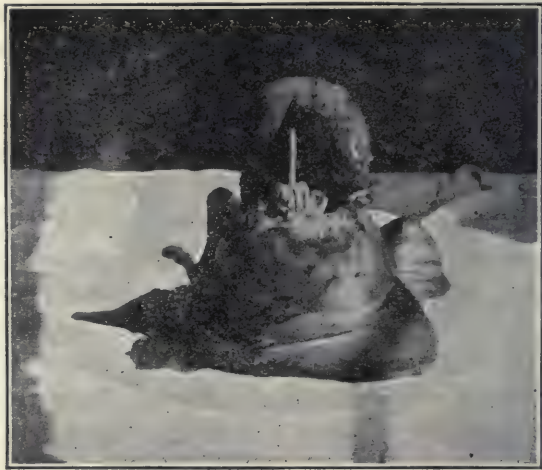


FIG. 6.—Head of hog affected with necrotic stomatitis due to the necrosis bacillus. The lower lips has sloughed away, exposing the teeth. (Sheep placed on one eastern farm where losses from this disease in hogs had occurred developed lip-and-leg ulceration three weeks after their arrival. (Photograph by Dr. Herman Busman.)

time, and labor of treating the disease in an affected band, it is evident that the importance of the infection has not been overestimated. Fortunately, if taken in time, the disease in the vast majority of cases responds readily to treatment, the principal requisite being vigilance on the part of the herder to cut



FIG. 7.—Lesions on the tongue, check, and hard palate in calf diphtheria, due to the necrosis bacillus. (This calf with 18 others became infected by being placed in a corral where sheep with lip-and-leg ulceration had been. Other calves from the same herd placed on another part of the ranch remained healthy.) (Photograph by Dr. Harvey B. Hood.)

out as soon as they occur all cases of the infection, which should be placed in the hospital band for hand treatment.

The losses have varied considerably in the different States and sections. One company lost 3,000, or 10 per cent., in 1909; another lost 700 out of 2,000 old sheep, besides a shrinkage in the lamb crop due to abortion; while still another flock master placed his loss at \$15,000 from the effects of the disease.

Bucks, more valuable in proportion to numbers, are lost to service or become the greatest menace to uninfected bands. Segregation of the infected sheep, of no great consequence in a dry band, when attempted in a lamb-and-ewe band means separation of the old from the young, resulting in the "bumming" of numerous lambs in the band and a consequent financial loss. Flock masters who have experienced an active attack of this disease in their lambs realize its importance and the necessity for drastic measures in holding the disease in check. Other owners, whose sheep have had only a mild attack, scout the seriousness of the disease, but may yet learn of its devastating tendency under unfavorable conditions. It is evident that sheep are affected but mildly under favorable climatic conditions and with abundant nutritious feed. When thus affected the animal may quickly and even spontaneously recover. But in fall and winter, when bad weather and poor feed tend to lower the powers of resistance, the disease quickly makes great headway with a greater relative virulence, and in consequence a certain number of animals become so badly affected that no hope of cure at a reasonable cost or in a reasonable time may be entertained.

TREATMENT.

In prevention lies the most important means of keeping the band clean; in treatment lies the only means of making a diseased band healthy.

Starting with a clean flock of sheep and wishing to introduce new blood into the band, a quarantine of two weeks is advisable; then, if no case of the disease has made its appearance, it will be safe to place the newly arrived sheep with the rest of the flock. A very careful examination of all sheep, especially those intended for breeding purposes, should be made, and in the event of finding any infected sheep in the band these should be cut out, thrown into a hospital band, and treated at once, keeping very close watch on the flock for any new cases that may develop later.

Prevention should therefore be carried out along three lines: (1) Separation of the sick from the healthy animals; (2) close scrutiny of the sheep that have been exposed to infection by contact with affected animals or premises, or otherwise; (3) complete disinfection of all pens, corrals, and sheds, as the necrosis bacilli will retain their virulence under favorable conditions in and around the sheepfold for several years. The walls, racks, and troughs should be sprinkled with a 5 per cent. solution of sheep dip or other similar disinfectant. The manure and a portion of the surface soil of the corral should be removed and the ground sprinkled with the disinfectant solution. If possible, the healthy sheep should be taken to new and uninfected bed grounds and pastured on uninfected range. Experience has shown that sound sheep may be safely pastured on land that has been previously occupied by animals suffering from lip-and-leg ulceration, if a winter's frosts have been allowed to intervene. The germs of the disease seem to be subdued effectively by this means, and pastures which have become contaminated in one season may be considered safe for their customary usage during the following season. However, the impossibility of changing range in many cases, in some not even temporarily, makes quick eradication the more difficult.

The treatment of these affections occasioned by the presence of necrosis organisms, no matter how many varieties of the disease may make their appearance, can be reduced to a few words, namely, disinfection and cleanliness, or disinfection and prevention. While selecting treatment for that portion of the flock in which the disease has become actually established, it should be remembered that the principal requisite is to expose properly the affected surfaces in order that the applied remedy may destroy the infectious matter which has lodged upon them. The remedy which will accomplish this most readily and at the same time without giving rise to harmful secondary conditions is evidently the one that should be given preference.

Treatment of this disease by local antiseptics is very satisfactory if begun in time and applied energetically. It should not

be deferred, as better results will be obtained by attacking the outbreak as soon as discovered than can be expected if the disease is permitted to spread among the band or penetrate deeper into the tissues of the affected parts.

In mild, unadvanced cases of the lip and leg form the best results are obtained by removing entirely the scabs and shreds of tissue from the diseased areas by means of a piece of wood sharpened to the proper angle, and applying three or four times weekly a solution of one of the cresol or coal-tar dips, or, what is far better, an emollient dressing containing 5 parts of one of these dips, 10 parts of sublimed sulphur, and 100 parts of mutton tallow, vaseline, or lard. In fact, this form of the disease responds quickly to any of the common antiseptic solutions, and it is astonishing how speedily the majority of these cases improve after careful hand treatment.

In actively progressive cases or in aggravated, chronic forms it is desirable to remove the scabs, scrape all the soft, spongy tissue from the ulcers, and touch the affected area with a 10 per cent. solution of zinc chlorid or nitric acid in the strength of 1 part to 7 parts of water. Many other remedies have been tried with more or less success, but these two solutions have given the most beneficial results. As these solutions are quite penetrating and extremely caustic in the above strength, they should be handled very carefully and applied to the diseased parts only. Unfortunately, many have used an excessive amount of these very irritating solutions on the principle that if a little is good, more is better. A pointed stick, covered at its point with a piece of cloth or a tag of wool, will answer nicely for making the application of the solution. After using either of these solutions, the subsequent treatment should consist of three applications weekly of the previously mentioned emollient dressing, which is antiseptic but not caustic.

Care must be taken with these caustic solutions, as it is possible to do more harm than good if they are carelessly applied. In fact, the indiscriminate use of strong caustics or the drastic scraping of the ulcers with a sharp knife is detrimental rather

than beneficial, as in both cases harm has been done in exposing fresh unprotected surfaces to reinfection.

While a cure of the majority of the chronic and severe cases may be accomplished with four or five weeks of this treatment, the expense of any treatment applied to the small percentage of these cases which resist this method of handling will usually amount to more than the value of the animal when recovered. Therefore, when the number of old cases in the band is small, and the lesions deep, long standing, and resistant to treatment, their destruction is recommended.

Where large numbers of sheep under range conditions become affected and all require hand treatment, the problem is a difficult one. Should the disease attack a large number of animals on the legs and feet, and hand treatment is impracticable, the ulcers may be best treated by causing the affected sheep to pass three times weekly through a shallow trough containing a 5 per cent. solution of any of the recognized sheep dips, but care must be taken to insure the fluid coming in direct contact with the sore parts. Those badly infected cases which show a tendency to resist treatment should be hand treated and the affected parts curetted and properly drained. If the lesions are on the coronary band or hoof, all the diseased or loosened portions should be removed with the knife. As in everything else, diligence and careful attention are necessary for successful results in these stubborn cases.

Treatment of the venereal form especially demands this careful handling. The penis of the bucks, if found diseased, should be forced out of the sheath and the necrotic patches cautiously cauterized with the zinc chlorid or nitric acid solution previously mentioned, and dressed daily by injecting a 1 per cent. sheep-dip solution, a 1 to 500 permanganate of potash solution, or a 25 per cent. solution of peroxid of hydrogen into the sheath until cured. If the penis or inner part of the sheath is extremely ulcerated and the prospects of cure is not favorable in a reasonable time the animal should be killed. Lesions on the external part of the sheath are treated like similar lesions on the lips and

legs. All the tags of filthy wool should be removed, and if the lesions are mild, treat with mild antiseptics every two or three days; if severe or chronic, cauterize first and then dress with mild antiseptics three times weekly. Care must be observed, however, not to overdo the cauterization on this part, as closure of the orifice of the sheath is liable to occur as a result of too vigorous treatment, and a severe inflammation and swelling of these parts may take place. The same strength injections of sheep dip, peroxid of hydrogen, or potassium permanganate, as above mentioned, may be used in the vagina of the ewes, and the external lesions treated the same way as those on the sheaths of the bucks and wethers.

At times an infection with the necrosis germ is seen in the form of abscesses containing semisolid pus and spoken of by shepherds as boils. These are very easily cured by opening them with a knife, cleaning out the pus, and applying the disinfectant and antiseptic solutions already referred to.

The warty lip form of this disease, as already mentioned, runs a course to recovery under favorable conditions in about three to four weeks, but medicinal treatment will materially aid recovery and prevent some of the cases from becoming malignant or chronic with more or less loss of tissue from ulceration. The application of lard, mutton tallow, or vaseline containing 5 per cent. of a recognized sheep dip has been very beneficial after rubbing off the scabs and crusts that form around the margins of the lips and nostrils. The necrosis germ being one which thrives best without oxygen, exposure to the atmosphere will of itself prove beneficial. Pure strength coal-tar dips, peroxid of hydrogen, tincture of iodine, and 1 per cent. pyoktannin have all been found efficient, but the milder remedy just before recommended has given the best results. The lesions of the lining membrane of the mouth, which sometimes accompany this disease of lambs, may be satisfactorily treated by washing the mouth with a 2 per cent. chlorate of potash solution, a 3 per cent. boric acid solution, or a 1 per cent. creolin solution.

The German treatment, which the writer has not yet tried because it has just been published, consists in the application of 1 part of creosote and 50 parts of cod-liver, linseed, or castor oil externally, and the administration of 2 tablespoonfuls of this mixture internally to each lamb daily.

As an aid to treatment, as well as a preventive measure, it would be advisable to feed to the sheep salt which contains either sulphur in the proportion of 1 part to 12, or crude carbolic acid 1 part to 100—that is, about 4 ounces of crude carbolic acid poured upon 12 quarts of ordinary barrel salt and thoroughly mixed.

After the affected sheep have received local treatment and recovered they should be dipped in one of the recognized sheep dips prior to being turned upon uninfected pastures or premises. Recent developments strongly indicate that much territory is infected, and it is difficult to assert that any given range is entirely clean upon which to run the sheep after dipping. While the dips may destroy unprotected bacilli on the body of the sheep, they have less effect upon those germs which are protected by the grease, dirt, and yolk of the wool. Again, it is often difficult to find all infected animals within the band, and the disease appearing in them following dipping reflects unfairly upon the effects of the dip. Certain sheep-dip preparations do not properly emulsify in alkali water, which is the only kind available in many sections, and the results from such dips are not as efficient as they should be. However, one dipping of these recovered cases must be considered from our present view point as a necessary precautionary measure.

In conclusion, it is my opinion that the place to suppress this disease is on the range, and if much inconvenience and financial loss is to be avoided in making shipments to non-infected States the individual flock master must battle with it at home, holding back all diseased or recently exposed sheep and shipping only those which remain healthy after they have been removed from infection for at least two weeks.

VETERINARY SCIENCE AND ITS PROBLEMS.*

BY VERANUS A. MOORE, ITHACA, N. Y.

When your president kindly requested me to speak this evening, I was glad to accept the honor conferred by the invitation, but the selection of a topic for discussion was perplexing. It occurred to me, however, that it might be profitable to set aside the theories and methods by which we perform our daily tasks and scan for a few moments the broader horizon of the profession we represent, for the purpose of defining its obligations and recognizing its problems and possibilities.

Every profession has passed through its period of the application of theories based on the dictates of the untrained mind and eventually returned to the rock of science which for so long it endeavored to escape. "It is a pity," said Professor Abbe, "that the errors of past centuries should still continue to be disseminated long after scientific research has overthrown them. It is easy to start false theories and to believe them, because they are generally simple and plausible, but long years of work are necessary before we get at the secrets of nature." It was not strange that the cloak of mysticism of the ancient medicine man should have fallen upon those who later endeavored to reduce the suffering in dumb creation. It was also perfectly natural that after its wanderings the veterinary profession in America should return to the shrine of truth and drink long and deep at the fountain of science which gives to it all that makes it a profession. The desire in early times to become an artisan without the toils of science or the heeding of nature's laws was doubtless due to the slow progress made toward a knowledge of the causation of disease. Disease has for countless generations been re-

*Read before the Veterinary Medical Association of New York City, April 6, 1910.

garded as of divine or mystic origin, and this old superstition still casts its shadow over us and, consciously or unconsciously, many of us are influenced by it.

When I was a little boy my father, who was a farmer of small means, had a sick horse. The "horse doctor" was called, and after bleeding, blistering and cutting, apparently for no definite purpose, and in a manner very repugnant to my childish sympathies, the horse died. I do not know the cause of death, I do not know whether it was within the power of science or human skill to have saved him, but I can never forget the impression of distrust that well-intended but ignorant man made upon me. In more recent years I have witnessed treatments that were equally as empirical and listened to arguments in which the unfounded opinion of the speaker was set forth as the criterion of all truth. Not long since I saw a beautiful specimen of actinomycosis pronounced a tubercle, heard tuberculin condemned and scientific medicine hurled to the great "bow-wows" by artisans of veterinary medicine. In a like manner I heard practitioners pronounce the cause of death in a large herd of swine, where numbers of individuals were dying, a specific infectious disease, when there was nothing in the symptoms or morbid anatomy to suggest such a cause and where a little effort pointed out the sources of the various poisons that were killing the pigs. I do not wish in any way to belittle the achievements of the so-called practical man, but the profession, as well as the public, must be taught that application can never run ahead of the knowledge to be applied and that the only road to higher achievement in practical professional things is by the further development of pure science.

It is of the fundamental relation between pure science and the science of veterinary medicine that I wish to speak first, and finally to call attention to a few of the problems before us which, it seems, the veterinarian must solve.

No one who has inquired into the reason for the success of the good European veterinary colleges has failed to recognize that the secret of their usefulness was first the acquisition of

knowledge and later the development of means for its application. The fundamental discoveries relative to the nature and treatment of disease that have been made during the last fifty years are with few, if any, exceptions the products of carefully trained scientific men. The great leaders who have crystallized into orderly truth long suspended and heretofore unperceived fragments of learning opened the gates, as it were, to the great fields of knowledge that are to be harvested by the careful, painstaking, scientific workers who follow them. Contrary to the opinions of many, the greatest amount of so-called practical work of a higher order has been attained in those localities that were characterized by their large number of purely scientific investigators and those doing research. This is illustrated by the highly practical and successful methods for controlling animal diseases enforced in Denmark and Germany. The valuable work accomplished by such men as Bang, Ostertag, Fröhner, Kitt, Arloing, Nocard, Hutyra, Sir John M'Fadyean, Salmon and Pearson could not have been done except for their thorough scientific training.

In the light of the uniform truth, that where there is more science there is better practical work, the veterinary profession of to-day should learn a valuable lesson. If the knowledge which guides veterinary practice was analyzed we should find that it has been formulated in large part by those who were seeking the truth, or nature's laws, and often those men have been entirely outside of the profession. Lord Sydenham nearly three centuries ago laid down and acted upon the fundamental proposition that "all diseases should be described as objects of natural history." In discussing the method for the study of disease he said further: "In writing, therefore, such a natural history of diseases every merely philosophical hypothesis should be set aside and manifest and natural phenomena, however minute, should be noted with the utmost exactness." Sydenham's definition has proven to be true. Botanists and zoologists, nay, chemists and physiologists failed to become interested in these morbid processes until the pathologists and bacteriologists came to recognize in

the abnormal conditions we call disease, a wonderfully interesting combination of causes and effects. The success of the veterinary profession, therefore, depends upon the degree to which its members understand these causes and their effects and the fundamental biological laws and conditions which exert an influence over them.

The infectious diseases spread destruction in the animal kingdom with no relief until Pasteur, first a chemist and then a biologist, pointed out the error of existing theories, and showed that the control of these fearful maladies, as well as of the more common infections, depends upon a definite knowledge of the microbes that produce them. This knowledge is being acquired by scientific men who are working out the details crystallized in the principle of infection. Thus bacteriology came to be a definite part of an efficient veterinary curriculum—not that it was wanted as a practical thing, but because the truths it revealed could not be ignored; nor could they be acquired in any other manner.

Immunity is another subject which has come to form an important part in veterinary science. The laws underlying this phenomenon have been brought out by two master minds—Paul Ehrlich, a physician and scientist, and Metchnikoff, a zoologist. Here, again, the veterinary profession has adopted great truths from the field of pure science. It would be easy to continue until the entire range of veterinary activities was covered, when we should find that veterinary science is an aggregation of biological and physical sciences that have to do with the cause, treatment, and prevention of animal diseases. Thus pure science has given great truths from its choicest findings as a foundation for the veterinary profession. This heritage from pure science for the benefit of suffering dumb creation is one of the illustrations of the practical value of research work.

The first important fact that the veterinarian should recognize is that the working of the organs of the animal body is governed and controlled by subtle laws in metabolism and biochemistry, that are just as difficult to determine for a cat, cow

or horse as for the human being. This necessitates for the best results research of the highest order in these subjects. The processes of healing and recovery from disease are vested in the vital forces of the body and in order for man to strengthen these forces he must recognize and understand them. A glance at the history of infection will afford sufficient illustration. In the earlier days of bacteriology the great objective point to ascertain was the infecting organism. This was followed by the still more complicated problem of how the tissues respond to the infection, antitoxins and what they are, antibodies and where they come from. A study of the resistance of the body to invading organisms brought to light the existence of forces heretofore unrecognized; namely, the phagocyte and the complement. While these facts were at first looked upon as interesting fragments of knowledge with no practical value, they have come to be highly important factors not only in preventive medicine but also in practical therapeutics. No one can read Dr. Phillips' paper in the March REVIEW on bacterial vaccines, or Kitt's illuminating article on "The Biological Reactions" (Vol. XXI., p. 353, *Monatshefte für prak. Tierheilkunde*), without appreciating what a vital place in therapeutics and preventive medicine these laws of action and reaction of the tissues to bacterial bodies occupy in modern medicine. At first it seemed that only the great epizoötics were to be controlled by a knowledge of infection but with the introduction of opsonins and autogenic vaccines the more common and troublesome suppurating lesions are being more successfully controlled than ever before as a result of a further and apparently more accurate interpretation of a subtle law of nature. In this work we are beginning to correlate pure science with a most intensely practical phase of professional work.

The problems, however, are not restricted to the general diseases, in which more recent investigations have given such startling results, although here there are numerous important questions waiting for more satisfactory answers. The infectious diseases still point to many unsolved problems. Certain of the

great economic affections, such as abortion and sterility in cattle, are causing fearfully heavy losses to the cattle industry, and as yet we are groping in the dark concerning them. Millions of dollars' worth of poultry, sheep and swine annually become victims of diseases that as yet the veterinary profession with all its science and experience is unable to prevent. So severe are the losses that efforts are frequently made to secure relief by the application of theories not emanating from the veterinary profession. If veterinary science measures up to the demands of the public it must solve these problems. It must save our animal industry from the losses now sustained from diseases which should be prevented.

The great scourge of cattle, tuberculosis, is still at large in spite of the efforts of the veterinarian, the findings of the pathologist, and the warnings of the sanitarian. Although this is a widespread disease, it is of such a nature that its elimination depends more upon the efficient, accurate and honest work of the veterinarian as a practitioner, teacher and leader than upon any other agent. Sanitarians and legislators have wrestled with this problem for nearly twenty years, and there is evidence of more bovine tuberculosis to-day than there was twenty years ago. To whom, then, shall the cattle owner look for relief? We have one of the most stringent laws in the country relative to the control of tuberculin and the reacting animals, yet the state is reaching annually but about .2 of one per cent. of the cattle within her borders. If our eleven hundred veterinarians were each exerting an instructive and helpful influence upon the cattle owners, relative to the true nature of tuberculosis, how long would it require to change the lethargy of the public concerning this affliction to an active campaign against it? We should heed the work of Dr. Petersen and others in Denmark, who organize the cattle owners into clubs for the purpose of teaching them about tuberculosis and instituting rational measures for its elimination. Here the veterinarian becomes a true leader as well as a practitioner.

Tuberculosis has been discussed until it seems to be a threadbare topic. However, we must face the facts. It is for the veterinarian to discern, recommend and carry into effect policies and methods that will produce the desired results. Here, again, we must remember the relation of pure science to the success of the practitioner. Nowhere in the realm of disease is this interdependence better illustrated than in the case of tuberculosis. Read the record of the efforts to control it in Massachusetts and in our own state and the fact will be perfectly clear that application went ahead of the knowledge to be applied, so that after much waste of time and money a flag of truce was unfurled for the purpose of ascertaining the facts relative to this insidious malady.

Although methods of control went ahead, as if the disease were thoroughly understood, the results of research have shown that many of the assumed things concerning it are still undemonstrated. There are many interesting phases of this disease with which the veterinarian should be familiar, such as evidence relative to the portals of entry for the tubercle bacilli in cattle and experimental animals; the penetration of the tubercle bacilli into the lymph nodes; their passage through the mucous membranes as first pointed out by Nicolas and Descos and later confirmed by Ravenel; the means for the migration of the disease within the infected body; its mode of dissemination; and methods for its diagnosis. Of all these I wish at this time to refer briefly to but one, namely, the diagnosis by the use of tuberculin. It is in this connection that practitioners have experienced most difficulty. When the reaction is typical the interpretation is clear; but when the general effect is missing and the temperature does not rise above a possible normal plus the effect of some slight excitant the interpretation has been varied. Some have condemned, others passed such animals. The advocate of each of these interpretations bases his conclusion on experience, which often is not large. When, however, the theory for the action of tuberculin put forth by Eber some ten years ago, and more recently modified by Smith, becomes better understood, the ap-

parent discrepancies will disappear. This theory, which explains the varied phenomena, attributes the thermal reaction to the effect of the specific substance, thrown off by the tissues as a result of stimulation by tubercle bacilli, upon the tuberculin. This action consists in the modification of the tuberculin or in the splitting off of a substance which acts upon the heat centres. This specific substance seems to be retained within the tubercle or its immediate surroundings. In case of arrested or walled-off tubercles it is shut within the capsule and cannot be reached by the tuberculin. In case of very early tubercles or partially arrested ones there may be an insufficient quantity of the specific substance to change enough tuberculin to cause a typical reaction but sufficient to bring about a disturbance of the temperature equilibrium. I have dwelt upon this point somewhat at length because it illustrates how important it is for the practitioner to know the facts or the working hypothesis in order to understand his problem.* I have spoken of tuberculosis, which is largely a question for the rural practitioner, but the problems in connection with glanders are strikingly similar for the city veterinarian.

There are two other problems of great practical value which, so far as I can ascertain, are for the veterinarian to solve. I refer to the inspection of dairy herds for the production of clean milk and to local or state meat inspection. To be sure, laymen can and do accomplish much by way of securing better light, ventilation and more cleanly conditions generally; but the real question so far as the consumer is concerned is, is the milk safe? A clean milk is not a clean milk in the sense this term implies if it comes from cows suffering with general disease or localized udder affections which may cause the milk to contain micro-organisms injurious to human health. Dairy inspection, therefore, should be made by a trained veterinarian, or if by a layman for cleanliness, it should be supplemented by the veterinarian to pass upon the health of the animals. More than this, these dairies should be inspected frequently, not at long intervals. The Copenhagen Milk Supply Company have the cows from which

they obtain milk inspected by thoroughly trained veterinarians every two weeks, and the inhabitants of Copenhagen claim to have the lowest mortality in children. The inspection most necessary is one that will detect cattle that are physically unfit to produce milk for human food; and for this work there is but one class of trained men.

Local meat inspection is a most important work for the veterinarian. The people of the country will soon demand the service, and it is the duty of the veterinary profession to see to it that it is a workable and efficient one. Here the essential danger to be avoided is the consumption of meat from diseased animals. This carries with it the necessity for the employment of men versed in comparative pathology, who can recognize diseased flesh and make an accurate diagnosis. The bringing about of a satisfactory state or local meat inspection service devolves, therefore, almost entirely upon the veterinarians of the state, for they are the only men trained in the diseases of animals. In fact the relation of animal diseases to those of the human species is such that there should be a thoroughly trained veterinarian on every board of health. The dairy and local meat inspection services therefore are two very important lines of work in which the veterinarians should be leaders, for there is no other vocation or profession which combines the necessary groups of sciences necessary to properly fit one for such work.

Without entering into the realm of routine practice, in which I am convinced there is room for many improvements, the problems connected with the control of tuberculosis, glanders and rabies; the prevention of sterility and abortion in cattle; the prevention of the destructive diseases of poultry, swine and sheep; and the establishment of efficient milk, dairy and local meat inspections, are weighing heavily upon the veterinary profession. These are of great economic and sanitary importance, and the people are looking to the veterinarians for relief because the science of their profession and no other includes the basic knowledge necessary to deal with them.

If I have been at all clear it is evident that, with many of the diseases at least, prevention is of greater significance than treatment. The medical professions have for past ages dealt with the treatment of diseases or the checking of their spread in case of epidemics or epizootics. With the introduction of preventive medicine we have come against a problem the solution of which seems to be more difficult professionally than any heretofore encountered, namely, the education, type and quality of the men to practice it. The necessity of the practitioner being a thoroughly trained man is no longer questioned. Men versed in the science of veterinary medicine can do successfully routine practice, but the practitioners of preventive medicine must not only be skilled in the science and art of their profession but they must also be leaders. Animal owners will call a practitioner and gladly follow his instructions when a valued cow or horse is dangerously sick, who would never care to ask for his advice relative to the application of preventive measures. The successful practitioner of the future must of necessity, therefore, combine a thorough knowledge of the healing art with the personality characteristic of a leader. When we realize that in this country there are over \$4,000,000,000 worth of livestock, exclusive of poultry and pet animals, with an estimated annual loss from diseases which should be prevented of over \$300,000,000, the obligation of the veterinary profession is clear and its possibilities need no further elucidation.

I cannot close these fragmentary remarks without calling attention to one or two points that must be observed in securing for the profession vantage ground adequate to its responsibilities. The first and I believe most important of these is the doing away of the assumption that it is possible for an uneducated and untrained boy, earnest and well intended though he may be, to acquire in three short college years sufficient knowledge of the basic sciences included in veterinary medicine to fully meet the ever-growing demands upon the profession. The time has come when these demands of the country for the control of the diseases of the food-producing animals as well as of beasts of

burden must be satisfied. Already there are many who believe that the men who are trained in agricultural colleges can with a very little special instruction relative to disease and treatment do better work than the untrained veterinarian; and certain agricultural colleges are giving such instruction. Knowledge is power and it is common property, to be possessed by those who are willing to acquire it. It is clear that something must be done to equip and discipline our veterinary students so that they shall be qualified to become leaders among the educated men who are rapidly coming to be the animal owners of the country.

Finally, we should not forget that leaders are born, not made. There must be the initiative and determination which colleges cannot give. We are justified, however, in the assertion that if the colleges provided the necessary mechanism for imparting the knowledge and giving the training that must necessarily accompany initiative and leadership, they would become in this country, as in Germany, magnets that would attract those naturally qualified to take up veterinary work as a profession. To attain the ideal will require much time and hard work, but I have faith to believe that in this country as in Europe, the veterinary profession will meet its obligations and appreciate its possibilities.

SUCCULENT FEED FOR LAMBS.—Recent experiments at the Iowa Experiment Station show that with corn at ordinary prices cheaper gains on lambs may be made with dry feed than with roots or silage. When corn and silage are low in price, the gains made with silage are a little cheaper than those made with dry feed. The largest total gains were made by the lambs getting sugar beets, and the finish of this lot was also a little better. The lot getting turnips and cabbage required the largest amount of dry matter for each 100 pounds gain. Silage and dry feed came next. The least amount of dry matter was required where sugar beets and mangels were fed. The chief objection to mangels and sugar beets is the large amount of hand labor required to raise them. The results of these experiments are published in Bulletin No. 110 of the Iowa Experiment Station, which may be obtained free by writing to Director C. F. Curtiss, Iowa Experiment Station, Ames, Iowa.

THE VETERINARY COLLEGE AT BERLIN.

BY L. M. STECKEL, D.V.M. (O. S. U.).

FIRST IMPRESSIONS.—It was a cold and dreary December morning in 1908 when my eyes first cast sight upon the ROYAL VETERINARY COLLEGE (Koenigliche Tieraerztliche Hochschule), Berlin, Germany. The campus and buildings were covered with a layer of grayish white snow, and; save for a uniformed employee here and there, the many winding walks seemed to be deserted. To a stranger who figured this to be a lively place it made a very solemn impression. But this suspense was not to last long. Just as quiet as it was outside, the interior of the many buildings presented an active and busy assemblage of students and professors writing, lecturing, operating, or at the microscopes.

The college buildings are arranged in a somewhat irregular circle. Each building or institute is named after the course of studies pursued therein and is under the supervision of one of the professors who is the head of the respective branch of study, while the rector is the administrative head of the college.

When presenting myself to Professor Schmalz, the rector, he greeted me very cordially and spoke highly of the advanced strides taken by the United States in veterinary science. The other professors, too, complimented me on my coming from the land of limitless opportunities where several of the great discoveries in the veterinary field have been made. They referred especially to "Texas fever" and "hog cholera," which for years have baffled the most noted scientists, and for which discovery we have earned the appreciation of the entire world.

The students were also glad to entertain an American, inviting me to take part in their various college affairs, among

which "Die Kneipe," or the gathering in the beer halls, plays an important part. My attendance at the various lectures and clinics afforded me an opportunity of becoming acquainted with the conditions in one of the leading veterinary institutions of the "Fatherland," or perhaps in the world.

PROFESSOR SCHUTZ'S HEADQUARTERS.—One of the interesting centres of attraction for the students of the college is the Pathological Institute, of which Professor Schutz is the predominant figure. His large lecture hall is always filled to the last seat. Besides the regular students there are a number of post-graduates from Germany, Russia, Japan, and the United States, army veterinarians detailed to attend the courses, and many other visitors. All come to hear what the spry, three-score-and-ten, gray-haired professor has to say. For, the only way to learn from this world-famed scientist is to come there and listen to him, as he has not written any book on pathology and does not lecture from any. He prints, so to speak, his work and original investigations on the minds of his hearers right there in the classroom.

A loud shoving of feet (the custom there) is heard. An unassuming man appears on the platform. With a modest nod to the audience and a glance to see that all his necessary colored crayons are on the table, he commences to talk. His lecture to-day is on diseases of the heart. At first he explains the anatomy of the heart and its normal functions, at the same time not forgetting to give a gentle scolding to the students for not knowing this already, assuming that they don't. Then gradually, but clearly and with oratorical forcefulness, he goes into the details of the disease. Quite often he springs surprises by some of his statements, as, for instance, when he said that everybody believes the heart muscle to be red while in reality it is gray. In his lectures Professor Schutz continually refers to the original researches and investigations, which he and his assistants are constantly carrying on in the laboratory.

THE VARIOUS CLINICS.—At Professor Froehner's Clinic, the students stand in a sky-lighted clinical hall in a semicircular

manner, a horse and a uniformed employee in the centre. On a table near by there stand a beaker of urine, several test tubes with results of blood and urine analyses, and a chart showing the



ENTRANCE TO ADMINISTRATION HALL, ROYAL VETERINARY COLLEGE, BERLIN.

fever curve of the patient. One of the students in a white coat is the referee for the day. He has already the day before examined this horse and is now ready to report his findings. It

is a case of contagious pleuro-pneumonia (Brustseuche). The referee gives the history of the case as told by the owner, a description of the patient, the condition of the respiratory, digestive, urinary, nervous, and locomotary apparatus. Professor Froehner verifies the referee's statements by examining the patient carefully, namely, by percussion and auscultation and leading the patient about if that is possible. The referee then gives the prognosis and treatment of the disease, with reasons for his statements. After clinic Professor Froehner makes a round through the stables and acquaints himself with the conditions of the old and new patients and consults with his assistants as to the best method of treating them.

We next go over to the busy polyclinic conducted by Professor Kaernbach. Here there are every day about fifty horses brought over from the city and country to be examined for any and all diseases which affect the equine race. To this clinic the seniors are assigned in sections, and, with the aid of the professor and his assistants, are taught to make a diagnosis and recommend treatment. Each student is given one or more cases. He examines the animal carefully, questions the owner as to the time the sickness occurred, what remedies he has already given; for in many cases the animal has already had a taste of many sweet and sour medicines before coming to the clinic. The student then allows the horse to be led before the professor and is questioned as to his findings and the reasons for the same. The professor confirming the diagnosis and the treatment, the horse is taken into the hospital to be attended. Any and all operations not of a serious nature are performed here by the students under the direction of one of the assistants. Other cases are sent to the medical and surgical clinics for operations, or to be under observation in case an infectious disease is suspected.

From here we step over to the busiest as well as the largest place on the campus—the surgical clinic. As in the other departments, the students are divided into sections and assigned to appear at various times for practice in operating. At first

the students learn minor operations under the supervision of the assistants, and then they attend the major operations as carried out by Professor Eberlein. In the main operating hall there is an operating table and a throwing mat, the latter to acquaint the students with the most common ready-to-hand method of



AT THE POLYCLINIC.

throwing for an operation in the country. Before proceeding to the operation, Professor Eberlein explains in detail the various methods of operating the particular case in hand, the reasons for the same, the dangers connected with the operation and the sequelae, or the bad results which might follow. He particularly emphasizes the fact that the first requisite for a successful operation is asepsis, and this, coupled with skill, will bring best results. At this department the students are infused with the

true idea of veterinary practice, for while there are many fields for the veterinarian's activities, still the paramount issue of a veterinary college is to send out its students as able surgeons.

Another interesting place is the clinical building for the



WAITING FOR THE PROFESSOR.

treatment of small animals. This is under the direction of Professor Regenbogen and his two assistants, who, though greatly overtaxed, manage to examine as high as seventy-five animals during the polyclinic hours. Here, as naturally would be expected, the gentle sex is represented in large numbers. They bring their pet animals, dogs, cats and birds, big and little, young and old ones, pedigreed and curs, that the professor may look at their ailments. An employee distributes tickets to these visitors, thus insuring them a "next," and they wait in the re-

ception room until the professor arrives. During the clinic several of the students assist in the examination and treatment; some sit by the microscopes, while others write out prescriptions and record the cases. Here is some of the routine: A case is brought in; it is a dog suffering from indigestion. The animal is placed on the table, is examined carefully as to his visible mucous membranes, the pain he evinces on palpation in the region of the stomach and intestines, and with the story of the owner as to his refusal of food and so on, the professor explains to the students the diagnosis and gives a prescription for the case. Then another dog is brought in. This one is scratching himself, declares the owner. The skin is examined and from the reddish spots they scrape a little on one or more slides to be examined microscopically, and treatment is then recommended accordingly. Other cases were, a chicken with diphtheria, a cat run over by an automobile, a canary bird which has suddenly stopped singing, and many injured dogs which had to be bandaged. The cases which are of a more complicated nature are left in the clinic for one or more days to be operated on, or to be under observation or treatment for skin diseases, distemper, or rabies. After the polyclinic hours the professor retires to the operating room and with the aid of the assistants and students performs some of the necessary operations.

THE HYGIENIC INSTITUTE.—As a fitting change from the animal clinics we next wind our way to the Hygienic Institute, the home of the minute bodies or bacteria. What a change has come in the study of bacteria during the past quarter of a century! In place of just a room there is now an entire building dedicated to the study and culture of these organisms. The Hygienic Institute was formerly under the able and well-known Professor Ostertag, the pioneer of "meat inspection," but since the German government has recognized the importance of veterinary science for the welfare of the country and has called away this scientist to be the director of the veterinary division in the Imperial Health Department, the vacancy was filled by Professor Frosch, a medical man who has done considerable work in the

field of bacteriology. The course in this study is given by lectures and laboratory work. In the latter the students are divided into sections and receive, so to speak, "a course," and learn the essentials in the modern study of bacteriology. Professor Frosch and his assistants do a good deal of investigation work and have also charge of the serum production, which the college does for the state. Besides the regular students, there are older practitioners, army veterinarians and others to whom special courses are given.

In connection with the Hygienic Institute there is a Pathological Museum which is the best and most complete of its kind. Here we must again extend our appreciation to Dr. Ostertag, for it was he and his assistant, Dr. Stadie, who with tireless efforts made this museum what it is to-day. The laboratories for the study of piroplasmoses, and meat and milk hygiene are also in this building.

SOME OF THE OTHER PLACES.

THE PHYSIOLOGICAL INSTITUTE.—This is under the direction of Professor Abderhalden, a former co-worker in the chemical-physiological laboratory of the famous Emil Fischer. Dr. Abderhalden's lecture hall and laboratories resemble an electro-chemical workshop, as extensive experiments are carried out to illustrate the principles of physiology and physiological chemistry. A great deal of attention is paid to the teaching of physiology of the sense organs.

In the anatomical building there is a fine museum of anatomical specimens which is indeed a credit to this wonderful institution. Among the many interesting things found there is a mounted skeleton of the great charger ridden by Frederick the Great.

THE COLLEGE LIBRARY contains a great many volumes of the principal veterinary books, as well as a number of agricultural books of interest to the veterinary students. Each student by signing a card can borrow from the library as many books as he may need for reference or study purposes. There is also

a reading room attached to the library for the use of the students and professors.

THE COLLEGE DAIRY consists of a small select herd of the principal breeds of cattle. It serves as an object lesson for the study of the dairy breeds and to acquaint the students with the modern methods of keeping a sanitary dairy.



NARCOTIZING A DOG PRIOR TO THE OPERATION.
(Apologies to "Sport im Bild.")

SPORTS.—A word about the students' sports. There are a number of "corpses," or, as we would perhaps call them, "fraternities." These are organizations for the purpose of promoting social friendship among its members. It is in these that the fencing sport is mainly carried out, as each member is required to practice and participate in several fencing contests. Then there is a students' organization whose aim is to promote good fellowship among all the students and to care for any sick student. The student organization organizes clubs for dancing, skating, tennis, football, horseback riding, theatre and excursion

parties. The excursion parties embrace visits to places of interest of every description, as well as pleasure excursions to the country. It may be said here that the German students are more and more turning away from the "Kneipe" and indulge in the more strenuous American and English sports.

LAST IMPRESSIONS.—The Royal Veterinary College at Berlin, like most of the European colleges, has the benefit of age. It is old in traditions and has withstood the test of time. It has had men, great men, whose ambition in life it was to improve the college, and these men devoted their lives to the betterment of the study of veterinary medicine and to place it on an equal footing with the other learned professions. This college has as its leaders men who, like their predecessors, are a credit not only to the profession, but to the whole German nation, and the men who go forth from here can not fail but become leaders in the various lines of veterinary medicine.

THE North Carolina Veterinary Medical Association and the State Live Stock Association will hold a joint session at Monroe, June 23 and 24.

FEEDING WORK HORSES.—The Iowa Experiment Station has been conducting a series of experiments in feeding work horses. It has been found that oats are too expensive to feed in large quantities, and that the ration may be greatly cheapened by substituting oil meal, cottonseed meal, or gluten feed. The health, spirit and endurance of the horses was the same when fed corn in combination with one of these feeds as when oats were fed. These experiments show that oil meal may be worth as much as \$60 a ton for horse feeding, and cottonseed meal a little more. The horses did a hard summer's work on these feeds without any considerable loss in flesh. These experiments are of great value to farmers everywhere, as the question of feeding the work horses cheaply, and at the same time in such a way as to keep them in good flesh, is an important one. The results of the experiments have been published in bulletin form, and may be obtained free by writing to Director C. F. Curtiss, Iowa Experiment Station, Ames, Iowa, and asking for Bulletin No. 109.

THEORY AND THERAPY OF MILK FEVER SO-CALLED.

BY W. H. DALRYMPLE, M.R.C.V.S., LOUISIANA STATE UNIVERSITY, BATON ROUGE, LA.

Perhaps there is no one condition in the entire category of diseases about which there has been so much theorizing, as to its cause and treatment, as so-called milk fever in cows.

At the present time opinion seems to be divided between a toxin, as the etiological factor, and disturbance to the equilibrium of the circulation through sudden "fluxion," or, in this case, an abnormal determination of blood to the udder of the modern, artificially developed dairy cow, usually subsequent to the period of parturition, producing cerebral anemia. And here we might add, parenthetically, that the results obtained from the more recent methods of treatment seem to have revived the anemia theory, which heretofore had been more or less rejected.

As illustrative of the toxin theory, I quote from an article on the subject which appeared in a British veterinary periodical a few months ago.

The author, Mr. Reginald R. Smythe, M.R.C.V.S., has, among other things, the following to say:

"The theory now generally accepted is that of auto-intoxication, which presumes the disease to be due to a toxin produced by the animal's own body in the udder. The success of Schmidt's treatment seems to bear this theory out."

It is a little difficult to see just how this is so. True, Schmidt's theory, if we mistake not, fixed the disease as an auto-intoxication produced by the absorption into the circulation of leucomaines resulting from decomposition of the colostrum, and directed his use of potassium iodide as an antitoxic agent as well as to limit the lacteal secretion.

But in the light of our present experience with the more recent greater successes with inert agents, so far as antitoxic properties are concerned, Schmidt's original toxin theory would seem to have been considerably weakened.

Continuing, the author says: "It may be that at the time of parturition the breaking down of cell tissue essential to the production of colostrum is associated with the liberation of waste products of a toxic nature in sufficient quantities to produce the symptoms. It may be argued that whatever the animal be, at the period of parturition, the same process is undergone, but it must be remembered that the cow is nowadays merely a milking machine, and that the powers of milk and cream production, secured by selective breeding, are concentrated, or centered, upon the period of parturition. It may also be supposed that the toxin, even if produced in considerable quantity, is in the average cow rapidly excreted or converted by the body defences into some non-toxic body.

Supposing, then, that the normal condition of the animal's body is impaired by an overfat condition, or that atmospheric conditions are of such a nature as to lessen the powers of excretion through such channels as the skin or respiratory organs, might this not account, in some degree, for the occurrence of the disease under such circumstances? The bacterial origin of the supposed toxin is disproved by the absence of the fever always associated with the absorption of harmful organismal products."

In speaking of the modern treatment, the author states: "That oxidation of the toxin is not the object, is shown by the fact that even injection of warm sterilized water is quite sufficient, although the results are much slower, as the pressure within the udder is comparatively low."

We have not tried the warm water treatment, but with unfiltered atmospheric air we have had recoveries, from complete coma to apparent perfect health, in two and one-half hours, which is about as quick as the most sanguine could reasonably expect.

Further, the author quoted says: "Inflation of the udder brings about two objects: It dilates the milk ducts and prevents the cells being in apposition, and by increasing the volume of the ducts, causes constriction of the intricate system of lymphatics, passing through the intralobular connective tissue. This would allow the escape of fluids, which might be laden with toxins, down into the milk sinuses, while at the same time constriction of the lymphatics would diminish absorption. Seeing that the introduction of fresh toxin in the blood stream is avoided, it might be possible for the body to excrete that already present in the system."

Ever since what seem to have been superior results—to those with the iodide treatment—obtained with etherized air, by Kortman; oxygen, by Knusel; atmospheric air, by Andersen, of Scanderborg; and finally, our own personal experience with the latter, the writer has been quite forcibly impressed with the opinion that, no matter what the agent used, the effect is not due to any inherent property of an antiseptic nature, but simply the result of the tension produced limiting the supply of blood in the vessels of the udder, thereby regulating the disturbed circulation and restoring to the temporarily anemic brain something like a normal blood supply. Or, in other words, that the effect, no matter by what agent it is brought about, is largely, if not wholly, mechanical; and that on no other hypothesis could a similar result be accomplished, or cases of the disease aborted, in such a remarkably short space of time in any other way than by correcting cerebral anemia when present, or preventing complete anemia in the earlier stages of the disease.

This, of course, is theory, just as in the case of the toxin advocates. But to our mind it is one, in the light of more recent knowledge and experience, that appeals more readily and intelligibly to the comprehension than those so elaborately built up with regard to a toxin as the causal agent.

Bearing out this idea, it would appear that a number of the continental European authorities evidently favor the "fluxion" theory, and are obtaining excellent results by natural methods in

preventing the disease through the medium of the milk itself. In an abstract from the *Berliner Tier. Woch.*, published in the *London Veterinary Record* last year, Sahlmann and Dommerhold, district veterinarians in Germany and Holland respectively, hold that the calf should receive the necessary colostrum as soon as possible after birth, and not wait until driven to suck by hunger. Their advice is, after calving, to draw just so much milk as is required for the calf, and abstain from further milking. Or, in the words of Dommerhold: "The necessary milk to the calf; do not milk further."

This authority claims that this method has been tested for some years in Holland with the happiest results, especially in the province of Friesland, which contains not only the most milch cows, but also the best.

He explains its success in preventing milk fever by the Continental theory that the disease is due to a cerebral anemia, which is induced by the disturbance of the circulation caused by milking out of a distended udder. "Plenitude and distension of the udder," says the abstract, "no matter whether it is filled with iodide of potassium solution, saline solution, air or milk, regulates the circulation and so prevents the cerebral anemia of milk fever, or corrects it if present."

It is claimed that on one farm of 30 or 40 cows, where this method is always followed, only one case of milk fever has occurred during twelve years, and on that occasion the usual rule was departed from. The udder was unusually large and tense, and milking out immediately after calving was deemed necessary. This was done, and an attack of milk fever followed within two hours.

Besides increasing the tension within the udder, Dommerhold attributes another beneficial effect to infusions of air, viz., that the thick venous blood becomes thinner under the influence of air, and thus flows away more easily.

May we not see in this effect of tension within the udder, in regulating the circulation, and that produced on the character of the venous blood by air infusions, one very similar to that

previously brought about by the restricted dietary and the full cathartic in preventing an attack of this ailment? These latter evidently resulted in a lessening or depletion—thinning, shall we say?—of the blood, with a consequent lessening in the requirement for lacteal secretion, based upon the theory that an active gland is dependent upon a full and rich blood supply, and this upon a generous food supply that is rich in blood-forming nutrients.

In the one case there would seem to be a corrective of the cerebral anemia when present, by restoring equilibrium of the circulation; in the other, a preventive of anemia by regulation of the circulation.

Although the writer has held to the "fluxion" theory for some time, this short article has been prompted at this time by a perusal of the articles alluded to and quoted, and later by reading the excellent contribution on "Nervous Influence in Disease," by Prof. E. A. A. Grange, which he presented at the forty-sixth annual meeting of the A. V. M. A., in Chicago, in which he refers to the disease under consideration.

Dr. Grange quotes Prof. Smith, of Toronto, as informing him of an old country acquaintance, and a close student of such diseases, being of the opinion "that the air treatment produced an altered condition in the circulation of the brain," which statement, as he mentions, seemed to him to strike the nail on the head; although just how the change was produced was not given.

In venturing the opinion, Dr. Grange states: "That this altered condition of the circulation is produced by nervous impression from the udder to the nerve centre; and in this case the impression is introduced into the economy, *not* by sound, but by touch, or contact, from the air of the force-pump on the walls of the milk ducts, from which points it is conducted through an intricate nervous system to the circulation of the brain, where it produces its salutary effect."

Here, then, in Dr. Grange, and in Prof. Smith, I take it, we have at least two prominent authorities on this continent who favor the theory of cerebral anemia in milk fever.

As to the mechanism by which the air treatment, or other agents used to produce tension, produces its effect, as mentioned by Dr. Grange, it is a little difficult to accurately determine except, perhaps, by analogy.

Of course we must realize that all function is controlled by the nervous system, and sometimes restored by a direct stimulus acting reflexly. But in order that nerve centres and efferent branches may act with promptitude, they must be nourished by a more or less normal blood supply.

If, as the "fluxion" theory would seem to indicate, there is a somewhat sudden and abnormal determination of blood to the udder at this period, it would appear to mean a temporary diminution in the general circulation—the delicate cerebral circulation, of course, participating, but which is almost immediately restored when the supply to the udder is limited or retarded by tension within the gland. It is upon this theory, mainly, that we base our opinion of the effect being largely, if not wholly, of a mechanical nature. These remarks are not intended as a criticism of Dr. Grange's opinion, but rather to try to strengthen our own theory, which, after all, is only a theory, but which forcibly impresses us, until absolute facts have been demonstrated by further investigation. Dr. Grange's opinion is very much more in accord with our own than the opinions of those who still advocate the toxin theory of causation.

The writer feels sure that we all, as a profession, appreciate to the full the magnificent work of the great Dane, Herr Schmidt, of Kolding, in connection with his investigations concerning this hitherto fatal disease, and rejoice with him in the honor conferred by his sovereign in decorating him as a Knight of Danebrog. Herr Schmidt has also been awarded a vote of thanks, together with an annual premium, by the Danish Parliament; and in many countries has he been honored with the degree of membership of veterinary and agricultural societies.

If Schmidt's original toxin theory of the cause of milk fever should not, perhaps, be in full accord with more recent experiences, and even should his success with the treatment have been

more or less accidental—so far as the effect of potassium iodide, per se, was concerned—yet all possible credit is due him as being the first to strike at the correct location of the trouble, thereby making possible the magnificent successes that have since been achieved.

DR. R. P. LYMAN, with his family, left Kansas City the last week in May and journeyed eastward to spend the summer vacation in Connecticut; Hartford being the objective point.

DR. W. L. WILLIAMS, New York State Veterinary College, is conducting an extensive investigation as to the prevalence of infectious vaginitis, also contagious abortion in cattle, and is making a careful study of post mortem lesions by a large number of autopsies conducted at the abattoirs in the large packing centres:

THE KANSAS CITY VETERINARY COLLEGE has arranged a post graduate course of short duration to be given during mid-summer, beginning July 8 and continuing until August 10. This time has been selected because the rush of practice incident to the spring months will be over in most sections of the central west and there usually follows a slack period. At this time practitioners will feel at greatest liberty to take the time to attend a special course; further, they will be able to secure, during this time, the services of an assistant or an experienced under-graduate to care for their clientele while attending a special course, an arrangement not readily made during a regular college session; and also at this time the college Faculty can give post graduate classes undivided attention which could not be done during the winter months. This course is designed to enable the veterinarians to review surgical and visceral anatomy of the horse, ox and dog, and to become thoroughly familiar with the newer surgical operations; also to bring their studies in the various laboratory subjects up to the present advanced standard and thus increase their efficiency as practitioners. Food hygiene is daily becoming more and more important in the public mind and this course is planned to aid veterinarians, who desire a larger part in this newer field of scientific service, to become more fully prepared to meet the requirements for Dairy and Milk Sanitary Officers and Meat Food Inspectors. A wide variety of special studies are open to those who take this course.

THE PRODUCTION OF MILK.*

BY MATTHEW WILSON, M.R.C.V.S., WAUKEGAN, ILL.

Milk and its relation to public health is to-day one of the most important topics. Its value as a food we need not discuss. That is a subject perhaps more for our brethren of the medical profession. Its disease-producing qualities, either in a direct or an indirect way, we can also leave to their discussion; but, as one of the great missions on earth of the veterinary profession to-day is prophylaxis or preventive treatment, it becomes our part of the business of preserving public health, to search into the remote causes of its disease or death-dealing conditions, and, if within our power, remove them.

There is an old saying that "an ounce of prevention is worth a pound of cure." Taking that to be true, then, in relation to public health, comparative value with our medical brethren is 1 to 16—the reverse of the heaven-born ratio. The natural law of cause and effect we often hear of. Effect, we see every day of our lives; cause, we are searching for every day of our lives. Remove the cause and the symptoms or effects are easily taken care of.

The medical profession is lauded to the skies for some of its work in determining and removing the cause of, and practically reducing to a minimum the outbreaks of many of our most virulent diseases that have heretofore affected the human family. But when it comes to the tracing of many of the diseases of the human race, due probably to the consumption of animal food, then they are at sea without the aid of the veterinary profession. The rapidity with which the death rate from the white plague is increasing in the human family, has brought about a united

*Presented at the Twenty-seventh Annual Meeting of the Illinois State Veterinary Medical Association.

effort to search for and remove any or all of the possible or probable cause of it. Among the possible or probable causes, we find the contagion to be derived from infected animal food. As to the physical relationship between the bacillus of human and bovine tuberculosis, there is much argument for and against; the consensus of opinions being that there is a direct relationship and that they are transmissible from animal to man, and vice versa, to a greater or less extent. This being true, then we find one of our probable sources of infection in the human family, and especially in the infantile part of it, to be milk from tuberculous cows. The extent of this disease in dairy cattle varies in different parts of the country, ranging in percentage from 10 to 25 or more. This variation is in all probability due to their environment. In a personal application of the tuberculin test to about 1,000 head of cattle in the vicinity in which I practice, I found 14.6 per cent. of these cattle showing a positive reaction, and as I am sure the test was applied in the manner as directed by the Chicago Board of Health, I have every reason to believe this number of cattle was tuberculous.

When we consider that about one out of every seven dairy cows suffers from this disease and if only a percentage of these would again void tubercle bacilli in their milk, have we not sufficient cause to compel those who are furnishing milk to the babes of our large cities to do so under certain restrictions and so compel them to use every means known to science to remove as far as possible this one probable source of infection? The method of doing this and the means to be applied is a hard question to solve. There is no doubt but what with the tuberculin test we can discover to what extent the disease exists. The methods to be employed for its eradication furnishes a wide field for discussion. Certain localities can make and pass laws compelling the producers of its milk supply to do so under certain restrictions. If they insist that this milk supply is to come only from non-tuberculous cows, then what is to become of the large volume of milk produced by tuberculous cows? If they insist further that all *milk products* such as butter and cheese shall

come only from the same source, then the volume of discarded milk is still greater. If this milk is discarded on account of its supposed infection by the tubercle bacillus and pasteurization is the method employed to sterilize or make the germ ineffective, do we not by raising it to the required temperature destroy to a large extent the food value of this milk? The producer here must be taken into consideration. It is natural that he will look for a market for his product where these restrictions do not exist, and the result is that unprotected communities are found to consume an overdose of something that, to say the least, is not good for them. That this condition does exist I am sure of.

We tell the farmer to isolate his infected cows; raise calves from them, but not allow the calves to suck the mothers and feed only the boiled product. Advise the majority of farmers to do this and he will consign you to a place kept at a pasteurizing temperature the year round. The discussion of this subject from the standpoint of producer and consumer would end only by the limitation of time.

The method as suggested and laid down by our State Veterinarian, Dr. J. M. Wright, for applying of the tuberculin test, will do more to prevent the traffic in tuberculous cows than any way that has occurred to me yet. The stamping of the letter "T" in the right ear of reacting animals will be like the branding of Cain.

The fact that a milk-producing animal is affected with tuberculosis is not the only condition that makes her milk a source of infection or an impure article of food. The cow may be perfectly healthy, she may be very choice in her articles of diet, she may complete her toilet as far as she can reach herself with her tongue, may try to keep out of as much filth and dirt as she can, and still her lacteal fluid, no matter how rich in butter fats it may be, prove to be a source of infection. We will take for instance a perfectly healthy animal. She is housed with a number of others in a so-called stable that the average man has to lower his head to walk in; overhead to help keep her warm is stored 50 tons of hay; in front of her and divided only by a

wide-cracked board partition is a horse stable; behind her an enormous manure pile separated only from her by a board wall; at either end a board wall with a door banked up several feet with manure; no ventilation except what comes in through the cracks; a floor behind her upon which one has to walk with rubbers or rubber boots to keep his feet dry from the slime that oozes up from between the boards, and yet we expect that perfectly healthy cow to produce good milk. The well from which she drinks is close to the barnyard, acting as a good cesspool for the barnyard drainage; the cans that carry her milk are washed out with the water from this same well; the cans, while standing on the barn floor waiting for the milk to be strained into it, are guarded religiously by a number of cats, waiting for the overflow of milk or foam, and yet we wonder why it is that so much typhoid fever occurs in certain districts in towns and cities where the drinking water supply is good. The conditions described are not exaggerated as I have seen them exactly as described.

We will take another condition of affairs. Scarlet fever has broken out among the members or working force of a dairy farm. The physician in charge probably forbids them to ship their milk from the farm during the existence of the disease. This is done. The affected members become convalescent; they are physically able to do chores, milk cows, etc; the physician's visits cease. Is there any reason, now, why this milk from a perfectly healthy cow, milked by a person who is in the desquamation stage of scarlet fever, should not now be shipped to the city and fed to our children? And yet people wonder where so many of our epidemics of scarlet fever originate. It is merely a case of a "little leaven, leavening the whole lump."

The housewife wonders why her milk sours so quickly even when kept in an icebox from the time she receives it from her milkman. If she could see the millions of fermentative and putrefactive bacteria the milk contains she would not wonder. All these are conditions for which the cow herself is not to blame,

but are the fault of the dairy man himself; he and not the cow is the one to be treated for the existing conditions.

These are only samples of the many things that bring about the contamination of our milk supply and for which a remedy is to be found. You try and reason with the producer and show him how, by a certain amount of effort and some expense, these conditions can to a great extent be remedied, and he will tell you it does not pay, that at the present price of milk he cannot afford it; others, again, are on rented farms, the conditions of their lease calling for no improvements, and they will not make them themselves; others, again, will tell you they have milked cows all their life, their father and grandfathers before them, and that they never heard of such tommyrot until lately and that it is all humbug. They will probably point you out a large family raised on a farm and by its products, and ask you to show them a healthier lot of individuals. They do not seem to understand the difference in environment and that their surroundings of unlimited fresh air and sunshine are antagonistic to disease, while those in the crowded tenements are conducive to it.

What, then, is the remedy for all this? We are told that the great majority of the people of to-day are to a certain extent educated. This being true, then a campaign of education is the natural remedy. This campaign must, to a great extent, be made compulsory. People wallowed in the filth and dirt of their own emanations until sewerage and sanitary closets were made compulsory and to-day they are accepted as a necessity.

The tuberculin test is an example of what must be made compulsory. How many dairymen during the past year would have had the test applied to their herds, had it not been made necessary for them to do so in order to find a market for their milk. Then, again, the manner in which the test was applied by many so-called veterinarians was a farce and the educational part of it not only lost, but it made the members of our profession the laughing stock of the country. There is much good that can be done by the application of the test if it is made by an intelli-

gent person and one who is acquainted with the various phases of the disease, and who can explain in a plain, able manner the benefits to be ultimately derived by the eradication of infected animals from any herd.

Our agricultural papers ought to be a medium for extending a knowledge of existing conditions and a remedy for them. A number of them, I am afraid, are not. They either unknowingly lend a wrong impression or their writings put in such a way as to be misleading and easily misunderstood by the average reader. A farmer told me only a few days ago that he had read in an agricultural paper that it would take fifteen years to get the dairy herds back in as good condition as they were before the test was applied and to rid them of the germs injected into them. All I had to ask him was the average life of a dairy cow. A woman told me she had only to heat the cow's milk to 80 degrees to make it fit for her babe to drink. I had a hard time trying to explain the difference between centigrade and Fahrenheit degrees and doubt very much whether or not she gave me the credit of knowing what I was talking about.

Through the courtesy of Dr. Chas. S. Bacon, of this city, I received a copy of the argument made between the Chicago Medical Society Milk Commission and the dairyman who desired to produce "certified milk." If the requirements of this agreement could be carried out on all dairy farms, there would be no need for papers nor discussion on impure milk. For obvious reasons they are impractical to the ordinary dairyman.

The only solution of the impure milk question that I can see, is to compel the dairyman to produce his milk under certain restrictions and these restrictions must be enforced, otherwise little or no good will be derived.

Much more attention must be paid to sanitation, and ventilation will greatly aid in this and is one of the most important changes that must be made in the ordinary dairy barn. I have found it almost impossible, on entering a dairy barn early in the morning, to breathe, until after the doors had been thrown open for a short time.

The inspectors sent out by the Board of Health must do better work than they have been doing; too much being taken by them for granted—herds inspected by merely looking at them from afar off and taking someone's word for the rest. There are still a number of dishonest people in the world.

All these changes will take time, and if they are demanded and the rule causing them to be enforced, it will only be a question of time—and let us hope a short time, at that—before the producer himself will see that it is to his own advantage to enforce them and to preach the doctrine to his fellow dairymen.

THE publication committee of the United States Sanitary Association announce that their publication is ready for distribution at one dollar (\$1) for the first copy and seventy-five cents (75c.) each for additional copies. Address Secretary J. J. Ferguson, Union Stock Yards, Chicago, Ill.

DR. L. R. BAKER, Chief of the B. A. I. inspection force at Kansas City, has received temporary assignment to the field service in Wyoming, the same having been requested because of continued ill health. The REVIEW trusts that a period of roughing it on the plains will aid in overcoming a long-standing catarrhal gastritis, and that the Doctor will be a rejuvenated man when he returns to his post in Kansas City.

THE KANSAS CITY ASSOCIATION OF VETERINARIANS is making a considerable effort to advance the professional interests in that city. This Association has about 25 members and holds meetings once a month. The last meeting was held at the Hotel Kupper where some 30 covers were laid. Among the guests was E. L. Barr, president of the Team Owners' Association, who talked at length upon the necessity of co-operation of the profession and team owners in the suppression of glanders. Through the efforts of these two associations the public watering troughs have been closed and persons desiring to use the public fountains are obliged to supply their own watering bucket. This method of controlling the spread of glanders was tried in Kansas City several years ago with marked diminution of the number of cases of glanders reported after two or three months' trial, and the present closing order will doubtless yield equally good results.

THE STIFF SICKNESS.

BY DR. JACQUES E. AGHION, VETERINARIAN, STATE DOMAINS, SAKHA, EGYPT.

In September, 1909, I was informed that an alarming disease had broken out on many farms. Bulls were getting sick in great numbers from some unusual disease.

The farms were visited by the writer with the intention of making some study as to the nature of the disease.

Arriving there, I was obliged to admit that the condition was altogether unfamiliar, especially in this part of the country (Lower Egypt). The disease is not by all means fatal, but very alarming, for what I can describe of the symptoms is not always constant. The disease is ushered in by general weakness, stiffness in one or more limbs, loss of appetite, rise of temperature from 39.5 to 39.6 and, in rare cases, to 40° C.; pulsation from 60 to 90 per minute; difficult breathing; inability to stand up or move; redness of the visible mucous membranes, thrifty coat, constipation, followed on the second or the third day by diarrhea.

This disease has only made its appearance for the second time in this part of the country, and I may say in all Egypt in the interval of fourteen years—that is, in 1895 and in 1909—as I was told by my learned chief, Dr. J. B. Piot Bey (Chief Veterinarian, State Domains), who calls the disease *La Fièvre Dengue*.

The disease generally terminates favorably. I have not lost a case in 135 bulls which were affected at that time. Only two cases developed a chronic lameness in one or more limbs for which I tried every possible treatment, but to no avail. These two cases were probably not promptly attended to. Treatment

consisted of placing the animal in a comfortable, well-ventilated stable; complete change of diet, generally green diet. Do not disturb the animal by moving him from one place to another as this may retard recovery. A liberal supply of cold water must be allowed in which may be dissolved moderate doses of mag. sulph. and pot. nit.

Animals generally get better on the third day and will completely recover in two weeks.

THE next annual meeting of the Missouri Veterinary Association will be held at Columbia, Missouri, June 28 and 29. The very active efforts of the secretary, Dr. Luckey, bespeaks a large attendance and a very successful meeting.

HORSE SHOWS IN 1910.

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| Plainfield, N. J., June 2-4. | Cobourg, Ont., August 16-19. |
| Devon, Pa., May 30-June 1. | Bar Harbor, Me., August 23- |
| Leesburg, Va., June 8-9. | 25. |
| Springfield, Ohio, June 8-10. | Berryville, Va., August 23- |
| Camden, N. J., June 9-11. | 25. |
| Galt, Ont., June 9-11. | Warrenton, Va., August 31- |
| Tuxedo, N. Y., June 10-11. | September 1. |
| Columbus, Ohio, June 14-16. | Newport, R. I., September 3-6 |
| Upperville, Va., June 15-16. | Rutland, Vt., September 6-9. |
| Culpeper, Va., July 4-5. | Syracuse, N. Y., September |
| Bayshore, N. Y., July 21-23. | 12-17. |
| Long Branch, N. J., July 24- | Ogdensburg, N. Y., Septem- |
| 29. | ber, 19-23. |
| Manassas, Va., July 27-28. | Poughkeepsie, N. Y., Septem- |
| Orange, Va., August 3-4. | ber 28-29. |
| Sea Girt, N. J., August 4-6. | Bryn Mawr, Pa., September |
| Charlottesville, Va., August 9- | 28-30. |
| 10. | Brockton, Mass., October 4-7. |
| Narragansett Pier, R. I., Au- | Louisville, Ky., October 10-15. |
| gust 12. | Atlanta, Ga., October 18-21. |
| White Sulphur Springs, W. | St. Louis, Mo., October 24- |
| Va., August 12-13. | 29. |
| Front Royal, Va., August 16- | New York (National), No- |
| 17. | vember 14-19. |

REPORTS OF CASES.

PYÆMIC ARTHRITIS AND THE USE OF NUCLEIN SOLUTION IN ITS TREATMENT.*

By JOSEPH H. JEFFERSON, V.S., Chicago, Ohio.

When on the 3d of last month I received a letter from our worthy secretary, Dr. Myers, asking me to prepare a paper of my own selection for this meeting, I was for a few moments undecided what to say in reply. My first thought was, as a young member, my ability to prepare an article appropriate for this occasion. My second thought was an appropriate subject to write on. Then came the third thought, the fact of which appealed to me more forcibly than both the others—that in order to maintain and perpetuate the par excellence of the Ohio State Veterinary Medical Association in all of its grand features, we younger members must take an active part and let a few of the older members sit back and enjoy the fruits of their labors performed in the earlier days. With this last thought in mind I took my pen and wrote Dr. Myers that I would prepare a paper to the best of my ability. After a brief synopsis of the etiology of this form of arthritis, I am going to relate to you in my own simple way, and give you in detail my own clinical observations of the case in question; for I have learned from experience that we can find nothing more beautiful for the average busy practitioner than a bouquet formed by picking a few wild flowers of practical experience which we can find growing on either side of the well-trod path of technical formalities.

Equally numerous in the past have been author's theories and discussions of this form of arthritis. But to-day we are in possession of the well-confirmed fact that it is due to infection through the umbilicus (*Streptococcus vulgaris*), which occurs at

* Read before the Ohio State Veterinary Medical Association, Jan. 18, 1910.

birth through the fresh navel coming in contact with infected bedding. The germ gains entrance and in the young foal finds a suitable media, reproduces, throws off its toxins, metastasis takes place, and hence the symptoms.

There is a chain of symptoms in connection with this disease which varies somewhat in appearance and severity, the severity depending upon the virulence of the infection, together with the opsonic power of the patient. The usual initiatory symptoms are elevation of temperature and little or no desire to nurse. The little subject becomes rapidly emaciated; there is a fetid diarrhoea in the majority of cases; the joints become swollen and very painful, and the patient resumes the recumbent position. Pervious urachus often coexists in this form of arthritis and it is generally believed that all cases of neglected pervious urachus lead to pyæmic arthritis. While I have seen both conditions independent, I have seen them associated together. In mild cases the initial lesions may be overlooked. The first symptom to attract attention is lameness and swelling of the joints, which simulate at first traumatism, and the mare receives a benediction from the owner in behalf of her carelessness; but on the next day when one of the other limbs is swollen likewise, the veterinarian is called and an examination of the navel, which is swollen and painful, reveals the true nature of the case.

PROGNOSIS.—While the mortality of this disease has been greatly reduced by the steady progress of veterinary hygiene, yet the mortality is very great, and those few that survive retain their large joints and regain health very slowly.

TREATMENT.—Owing to the fact that this disease is contracted by infection through the navel, the treatment is limited to its prevention by proper disinfection and antiseptically dressing the cord at birth. While prevention is very important in reducing the mortality of this disease, yet equally, or more important, are the curative agents to be employed when the disease is once established. Owing to the fact that all cases of pervious urachus render that area suitable for infection, all such cases should (in my opinion) be washed with a solution of bichloride, injected with the tincture of iodine and ligated with a strong ligature. Prior to the more recent therapeutical research, as stated above, the treatment of this disease was very unsatisfactory. Among the drugs most frequently resorted to as giving the most apparent results I might mention potassium iodide, arsenic, quinine, sodium hyposulphate, and salicylic acid;

with surgical and antiseptic attention to the various parts where suppuration occurs. While dealing with the treatment of this disease I feel that I would be doing my paper a great injustice if I were to omit the therapeutical experiences imparted to me by some of our prominent members, *i. e.*, the use of echinacea, which has given excellent results in the hands of several of the members. As there is no toxic effect from the use of echinacea, it is best given in large doses, from 20 to 60 drops every one to three hours, according to the severity of the case. Before passing on to give you in detail the particular case in question, let me ask you to go back with me for a moment and recall the many bad cases we have all had to treat and the great mortality which has attended our treatment; then we will be better able to appreciate the case I am about to describe.

The case in question was a draught colt foaled September 2. The owner noticed the colt lame on September 6 and, thinking he had received an injury, paid little attention to it. But on the next day, September 7, found him lame on one of the other legs, with pastern badly swollen. Thinking it rather strange, that evening he related the circumstance to a neighbor. The neighbor having had two similar cases, told the owner that the colt would die regardless of all he could do for him.

On the morning of the 8th he found one of the other legs badly swollen and the colt unable to rise without help, and also discovered that the urine was escaping through the navel. He then went to the 'phone to call my assistance. I, having left the night previous to attend the meeting at Chicago, the colt was left without treatment until September 11, when I returned.

Early on the morning of September 11 the owner called me up by 'phone and described the case to me, and I fully agreed with the prognosis of his neighbor, telling him the only hope I had of the case was a new treatment which I would like to try on the colt, and offering him a fair proposition, he told me to come out and treat the colt. On my arrival I found the colt down, all four legs swollen, urine escaping through the urachus, a foetid diarrhoea with severe colicky pains, temperature $105\frac{1}{2}$. I at once gave two ounces of castor oil, to which I added an anodine mixture. I then gave 10 c. c. nuclein sol. and 10 c. c. normal salt sol. hypodermically; left three one-dram powders of hypsulphate of soda to be given during the day; also left oral nuclein sol. to be given in dram doses every two hours, with directions to milk the mare and feed the colt, which the owner had been

doing. Returned late that evening, found the temperature 104, colicky pains ceased, and diarrhoea much improved; repeated my hypodermic nuclein sol. and continued my administration of the oral solution.

The following morning, September 12, found patient much improved, temperature 103½, swelling of the limbs much reduced, and with a little help would stand and nurse. Repeated my nuclein sol. and left same to be given orally. Returned that evening and found patient still improving, temperature 103, and with a little help had been up and nursed several times during the day. The following morning, September 13, found my patient still improving, temperature 102. I repeated my nuclein sol. and returned in the evening to find my patient able to get up and nurse without any assistance. I returned about noon of the next day, September 14, and found my patient walking around; swelling nearly all gone from limbs and navel. I again repeated my dose of nuclein solution hypodermically, leaving more of the oral solution to be given every three hours. I returned again September 16 and found my patient in good shape. I gave another dose of nuclein solution and left a four-ounce bottle of the oral solution with directions to give one dram every four hours daily. The colt continued to do finely, and I wish to say is as good a colt of his kind as there is in the country. And in closing I wish to say as I have said before, when we take into consideration the great mortality which has attended our treatment in this form of arthritis, I feel highly favorable towards nuclein solution in the treatment of pyæmic arthritis.

INFLUENZA WITH RHEUMATIC COMPLICATIONS.*

By Dr. H. E. MYERS, Fostoria, Ohio.

In reporting this case, I want to thank Dr. Longfellow for his kindness in supplying some of the facts concerning it.

HISTORY.—Roan mare, five years old, which for about a week previous had been more or less stupid. September 9 the symptoms were as follows: Temperature 105½; pulse 70 full

* Presented at the January meeting of the Ohio State Veterinary Medical Association.

and bounding; respiration short, quick and labored; general appearance very dejected; all visible mucous membrane congested; one eye badly swollen and mattering while the other in sympathy was watering and looked weak; nostrils extended and had a very dirty, smeary discharge which adhered rather closely. A tumefied swelling between the nostrils, which enlarged the whole nose and labia. The appetite remained good; on moving her she would stagger from one side to the other and was quite lame in the hind limb, which was held from the ground frequently; no enlargement could be noticed in either of the hind limbs, while the front ones were swollen at the knees but no lameness.

TREATMENT.—Give heart sedative and left febrifuge and diuretics. In two days she was reported much better; this continued for ten days, during which time she was given fresh air, sunshine and exercise.

About two weeks after first visit was called again, the owner saying that she was showing similar symptoms. Found her much the same with a tucked-up appearance of the flanks and was now showing the "rheumatic complications." Was in great pain, continually shifting from one limb to the other. Temperature $103\frac{1}{2}$; pulse soft but rapid.

TREATMENT.—Hot fomentations to the joints which were swollen and an aloetic pill. Fl. ext. colchicum alternated with quinine and sodium salicylate. Ounce doses nuclein were given daily.

RESULTS.—An improved condition and thought she would get along all right. Shortly after, I was called in consultation with Dr. Longfellow and we found her much the same as before, with symptoms of purpura hemorrhagica, viz.: Abrupt swelling of the nose and both front limbs above the knees; very weak and had to be assisted in rising; temperature 103; pulse 50.

TREATMENT.—Ounce doses of nuclein daily, also tr. iron, pot. dichromate and pot. nit. alternated with fl. ext. colchicum, iron and quinine.

RESULTS.—Another improvement after three days; owing to the great weakness she was put in slings during the day and allowed to lie down at night.

A strange feature of the case was that when warm the animal would get worse, and if it turned cold she would improve. After a few days a part of the last treatment was substituted with salol, belladonna and quinine; while it took a long time, the mare made a good recovery.

“STRANGLES.”

This animal, a gray mare twelve years old, had been at work and suddenly refused food. A slight discharge from the nostril, swelling of the submaxillary glands which continued to enlarge until the whole head was badly swollen, and an odematous swelling of the hind limbs, were the conditions found when called on the eighth day.

On further examination the temperature was found to be 105; pulse 60; the swelling was hot and painful to the touch; animal very weak.

TREATMENT.—Abscess was opened from which flowed several quarts of rich, creamy pus; cleaned cavity with peroxide of hydrogen. The medicinal treatment was the same as in any ordinary case, viz.: Fresh air; clean quarters; hot mash, etc. Flux nux and colchicum was also used.

The mare seemed to be doing nicely, when about a week later I was again called. She was found very weak; temperature 103½; pulse 50; swelling of the head greatly reduced; suppuration had nearly subsided at that point.

The peculiarity of the case was a swelling which extended from the upper part of the scapula backward along the spinal column through the sacral vertebra; this swelling was only on the left side and at least eight inches high.

TREATMENT, INTERNAL.—Calx sulphate, pulv. gentian and quinine sulphate alternated with flux nux and colchicum.

TREATMENT, EXTERNAL.—Stimulating liniment to the swollen parts. The third day I returned; three abscesses had formed, one above the cartilage of the prolongation, one about ten inches posterior, and the third in the sacral region; all were opened and a large amount of pus escaped. Wounds healed rapidly by thorough cleansing with H₂O₂. With care and attention recovery was complete.

Something to think about: Why was the swelling so distinctly on the one side?

AMPUTATION OF THE TONGUE.

By E. A. WESTON, G. M. V. C., Launceston, Australia.

The subject was an aged bay mare used to run in double harness in a cab. She had had a nasty sore under the tongue,

and her owner and a quack were dressing it when she pulled away and tore her tongue nearly out of her mouth. After the quack had put some slits in it to "let the inflammation out," her owner took her home, and from there she was sent to the knackers to be destroyed. The fellow in charge brought her up to my hospital late one evening to see if I could do anything with the case. It was springtime, and I had been going night and day for some time previously; so, time being precious and the mare of little value, I decided to perform a radical operation right away. The instruments were got ready, the mare thrown in one of the loose boxes, and my wife (who always acts as anaesthetist) administered chloroform. When the mare was well under, I put the gag in her mouth, applied a double half-hitch well up the tongue, and amputated $5\frac{1}{2}$ inches of it by the light of an electric lamp. Next morning she went home and the following day I removed the ligature, but unfortunately the piece of tongue included in it sloughed away, leaving the stump shorter than ever. After-treatment consisted in rinsing and syringing the mouth out with carbolic and lysol solutions. For about ten days the mare lived on liquid nourishment, which she drank herself. In the paddock during the day she would feed continuously, but she merely cropped the grass, half chewed it and spat it out. After the tenth day the wounds began to heal nicely, and she could get her food back and swallow it. From this out she did well and put on flesh, although she dropped a little food out of her mouth when feeding out of the manger. She has since been sold and is now at work some thirty miles from here. From my observations of this case, I would never hesitate to perform amputation of the tongue again.

TETANUS AS A SEQUEL TO OPERATION FOR UMBILICAL HERNIA BY LIGATURE.

By E. A. WESTON, G. M. V. C., Launceston, Australia.

As this is a sequel which none of the writers on veterinary surgery whom I have read (Williams, Mohler, Cadiot and Dollar) mention, the following cases are worth placing on record.

No. 1. This was a bay draft mare with a very large hernia.

After administering chloroform I applied a ligature as directed and subsequently applied a second one to hasten sloughing. The slough was washed and powdered with Calvert's carbolic powder daily and just when it was on the point of dropping off the mare went home. She had fed and done well up to this time and a couple of days after she went home the slough dropped off; the raw surface left was dressed antiseptically. Notwithstanding this she developed tetanus. I threw her and found a suppurating canal extending some distance under the skin. This was syringed out with 10 per cent. lysol solution and the surface of the wound dressed with the pure drug. Treatment consisted in cannabis Indica and chloral hydrate per rectum, but after about four weeks death ensued. This occurred several years ago, when I was young and inexperienced, and it caused me much mental perturbation.

This spring I operated on three cases about the same time. No. 1 was a bay draft filly. She was thrown and chloroformed and the hair clipped. The parts were then washed with lysol solution and a multiple ligation carried out, the ligatures being soaked in 10 per cent. lysol. Instructions were left to syringe round the base of the slough with carbolic solution daily as soon as the ligature began to cut in. After six days I called again and applied a fresh ligature and from this out the wound was carefully syringed according to directions every day. In about a fortnight from date of operation the slough dropped off and five days later the manager rang up to say that he was afraid the filly was getting lockjaw. I drove out and found his surmise correct, although the case was a mild one. To my great relief this filly recovered.

No. 2 was a foal with pervious and inflamed urachus, to which, after proper treatment and washing with lysol, a ligature was applied. The owners received instructions to syringe daily with an antiseptic and (the case being 30 miles away) to cut the slough off after three or four days. Being intelligent, educated men they carried out my instructions well, but, notwithstanding, the foal developed tetanus and died. In future when I operate by ligation the patient will receive a dose of anti-tetanic serum. Under ordinary farm conditions the statement about the wound healing aseptically after being painted with iodoform collodion, or powdered with tannic acid and iodoform, is all nonsense.

MOWEAQUA, ILLINOIS, May 4, 1910.

AMERICAN VETERINARY REVIEW, New York:

GENTLEMEN—The enclosed photo of a monstrosity was delivered by me from a four-year-old draft mare on April 24, 1910. Lower jaw was attached to breast bone, permanent open-



ing in median line extending from distal end of sternum to navel. Bowels laying without abdominal cavity. Mare due to foal May 7, 1910; foal dead apparently 36 or 48 hours.

Yours truly,

BENTLEY F. HUDSON, M.D.V.

INVERSION OF THE UTERUS IN THE MARE.

By E A. WESTON, G. M. V. C.

The subject was a young bay draft mare, with her first foal. I had been in the district the previous night attending another mare, and the train was just stopping at the siding for me, when a man came full gallop to the station. He explained that his mare had foaled a few hours ago, that the cleanings had been hanging from her; that having heard that they should not be left he had pulled on them, and that as a result all her "bear-

ings" had come down. I jumped into the trap and was soon on the field of action, where I found the mare leaning against the stable wall and trembling violently. Behind her hung a completely inverted uterus bleeding profusely. While they ran for hot water, towels and a sheet, I stripped, got out my ropes, and chloroform, and had the mare led out onto a clean patch of grass. Here she was thrown with her head down hill, the uterus washed, the remaining placenta removed, and an attempt made to replace it. This was found to be impossible owing to the mare straining, so a chaff bag was put over her head, chloroform administered, and the uterus returned to its place after a bit of manœuvering. Next four towels soaked in hot lysol solution were stuffed into it and a bottle—neck outwards—fixed in the vagina, which was finally closed by peg-stitching the vulva, leather being used for the pegs. The mare was now allowed to come around and given half a pint of whiskey to pick her up. During the night she had whiskey, ergot and quinine every three hours, and I left a prescription for chloral hydrate and chlorodyne to be given instead, should she start straining. The following morning I removed the stitches, bottle and towels and syringed the womb out. The whiskey was continued at longer intervals and the mare started to feed. Four days after the operation the mare, accompanied by her foal, was walked into my hospital, a distance of 18 miles, and seven days later she went home again, none the worse for the trouble she had been through.

B. A. I. VETERINARY INSPECTORS ASSOCIATION.

The regular monthly meeting was held May 13, at 8 p. m., being called to order by the president Dr. S. E. Bennett. The meeting was well attended and two new members were admitted to active membership. The chief events of interest for the evening were: (a) A talk by Dr. L. E. Day, Chief of the Pathological Laboratory, on recent work done by the laboratory on milk inspection. (b) The presentation of a paper by Dr. H. A. Smith on "Parturient Paresis." The paper substantiated the theory that the disease in question is caused by a cerebral anemia; and recounted a case, among others, in which Dr. A. J. Dammon removed the cranial cap of a patient so affected and actually observed the resumption of circulation in the brain after he had inflated the udder. Meeting adjourned at 10 p. m.

H. A. SMITH, Secretary-Treasurer.

CORRESPONDENCE.

ISTHMIAN CANAL COMMISSION,
Ancon Hospital,
Canal Zone, Isthmus of Panama.

BOARD OF HEALTH LABORATORY,
ANCON, C. Z., April 14, 1910.

Editors of the AMERICAN VETERINARY REVIEW:

Veterinarians may be interested in knowing that a pathogenic trypanosome has been found in the blood of an American gelding and in a number of American mules in the Commission corral here at Ancon.

The trypanosome *T. hippius*, n. sp., is being found in the blood of animals suffering from a disease called by the veterinarians "Swamp Fever," which corresponds clinically with the recent descriptions of "Swamp Fever" published in the United States. Symptoms noted in the animals here are: Anemia, irregular pyrexia, emaciation, conjunctival ecchymoses, unimpaired appetite, weakness of loins and posterior extremities (terminal), and rarely edema of dependent parts, such as belly, sheath or legs. All of the cases die in from two weeks to three or four months after the appearance of signs and symptoms.

The autopsy picture in all sub-acute and chronic cases permitted to die of the disease is uniformly characteristic and may be expressed in the following anatomical diagnosis:

Anemia.

Emaciation.

Conjunctival ecchymoses.

Epicardial and endocardial ecchymoses.

Acute hemorrhagic nephritis with cortical ecchymoses.

Splenic capsular ecchymoses.

Peritoneal ecchymoses.

Hemorrhagic necrosis of renal lymph nodes.

An average blood picture when the disease is well advanced is:

Red blood cells, 2,500,000.

Leukocytes, 12,500.

Polymorphonuclear leukocytes, 26 per cent.

Large and small mononuclears, 73 per cent.

Myelocytes, 1 per cent.

In some cases there is an eosinophilia due to associated intestinal parasites.

The disease is seen to resemble the accounts of "Swamp Fever" very closely, and also those of trypanosomal diseases of equines generally, particularly nagana.

The trypanosome as seen in the fresh blood appears and disappears with irregularity, appearing in numbers from one to a cover slip preparation, to five or ten to a field (8 ocular, 8mm. objective, Zeiss), for two or three days; and then disappearing for four, five or more days; generally present during a febrile paroxysm. It may, however, be impossible to demonstrate them in cover slips during such a period. The trypanosome is not as long as the rat trypanosome, *T. lewisi*, and its activity varies. Sometimes its motion is very rapid, at other times slow and jerky. The undulating membrane is fairly well developed, and can frequently be seen in action when the motion of the trypanosome is feeble. It does not cause the commotion among red blood corpuscles that *T. lewisi* does, probably on account of its shorter length. In stained preparations its length varies from 12 to 28 μ ., its breadth 2 to 4 μ .. Most specimens are 16 to 18 μ . in length. The trophonucleus is centrally placed and the kineto nucleus, placed quite posteriorly, is of fair size, and always visible, .5 to 1 μ . in diameter. The posterior end is usually blunt, not elongated, as in *T. lewisi*. There are at least two types, a relatively long form, and the commoner stumpy form.

	<i>Dimensions of Longer Form.</i>	<i>Dimensions of Stumpy Form.</i>
Length	28 mu.	16 to 18 mu. (a few 12 to 14 mu.)
Breadth	2. mu. (some 3 to 4 mu.)	2 to 4 mu.
Distance from kineto nucleus to posterior tip	1.75 mu.	Practically at tip.
Distance from posterior tip to middle oftropho-nucleus ...	10 mu.	7.5 mu.

The trypanosomes are practically always very rich in granules. Sometimes these are distributed discretely or arranged in lines; some are in the anterior half, and some in the posterior half. They are rather coarse and 17 or 18 may be counted. The lateral margins of the trypanosome are usually more deeply stained than the middle portion. The longer forms have a longer flagellum and are freer from granules. The kineto nucleus is almost always on the opposite margin from the undulating membrane, so that the chromatin filament usually crosses the posterior tip. A few specimens presented an achromatic line parallel with the chromatin filament and of equal breadth for a distance of about 4 mu. as it crossed the body. When inoculated into *Mus rattus*, already infected with *T. lewisi*, the contrasts between the two trypanosomes are well shown.

The trypanosome appears to resemble *T. dimorphon* more closely than any other and its identity with *T. brucei*, *T. evansi*, *T. equinum*, and *T. equiperdum* can be ruled out on morphological, clinical and pathological grounds.

Horses, mules, calf, dog, hog, goat, cats, rabbits, guinea pigs, agouti, monkeys, genus *Cebus*, rats and mice have been inoculated. Up to the present horses, mules, dogs, rabbits, agouti, cats, guinea pigs, rats, mice and monkeys have become infected. Mules, monkeys and guinea pigs have died.

A definite trypanosomal disease, then, is here established. It will be of some interest now to consider the following facts:

The disease had not been observed here since the American occupation, May, 1904. I have failed to demonstrate trypano-

somes in native horses, though there has been one suspicious case with lymphocytosis.

It appeared among a lot of mules and horses coming via New Orleans from the United States in April, 1909. The first cases and the first deaths appeared among this lot of animals. After a period of about ten months it was detected in animals that had been on the Isthmus from two to four years. When the disease first appeared it was called "Swamp Fever" by the veterinarians, one of whom had seen and treated cases in the Western states.

Occasional blood examinations failing to reveal trypanosomes, believing also that we were dealing with a filterable virus, and to determine the infectiousness of a filtrate, blood from three fatal cases in mules was passed through a porcelain filter and inoculated into one mule, No. 359, and two horses, Nos. 121 and 47. These were the only animals available for inoculation purposes. They had been condemned on account of viciousness or injury. The first two must from our present knowledge be eliminated from the experiment because they were in the lot from the States in which so many cases of "Swamp Fever" developed. Mule No. 359 died a few weeks after inoculation with the filtrate of typical "Swamp Fever." Horse No. 121 has become emaciated, while No. 47 has remained perfectly normal for six months. Horse No. 47 should have developed "Swamp Fever" if the virus is a filter passer. But on account of the long period of incubation reported in some cases, he remains under observation.

Trypanosomes were found in Horse No. 121 several weeks after the inoculation of the filtrate. Routine temperatures and blood examinations of animals in the corral have disclosed 13 cases of trypanosomiasis among sick mules, three of which have died with typical symptoms and all the pathological features of "Swamp Fever." Guinea pigs inoculated with their blood at autopsy have developed trypanosomiasis after seven to nine days. One guinea pig died on the twenty-seventh day.

As the clinical and autopsy picture of these three cases is identical with all the foregoing cases, I conclude that what has been called "Swamp Fever" here is equine trypanosomiasis. Now, as it was previously unknown in the corral, and apparently introduced from the States, the thought is at once suggested that "Swamp Fever" of the Western United States is a trypanosomal disease in which trypanosomes are rare in the peripheral

blood (as in Dourine), but which may luxuriate in this tropical climate. It would seem wise to look into the matter of the etiology of "Swamp Fever" in the light of this knowledge, and to make cultivation and inoculation experiments with susceptible animals, guinea pigs and monkeys in perhaps the elevated temperature of a thermostat.

If it should develop that "Swamp Fever is not a trypanosomal disease, then we have here a new trypanosomal disease of equines that at the present writing appears to be most fatal among mules. That horses are probably not very susceptible and when infected the disease lasts a considerable period of time.

A detailed study of this epidemic is being made by the writer, which will include observations on the epidemiology, symptomatology, pathology, method of transmission by bats, flies, biting flies, ticks, etc.

Respectfully,

SAMUEL T. DARLING, M.D.,

Chief of Laboratory.

OAKLAND, CAL., May 12, 1910.

Editors of the AMERICAN VETERINARY REVIEW:

GENTLEMEN—At the risk of being classed as a bunch of alarmists the local committee of arrangements desires to again issue, with your kind permission, a warning or two for the benefit of those who propose attending the meeting of the American Veterinary Medical Association in San Francisco next September.

Owing to the fact that three conventions will be pulled off during the same week of our meeting it will mean, of course, that San Francisco will have to take care of a great many visitors who will crowd its resources, as far as hotels are concerned, to the high-water mark.

It is obviously necessary, therefore, for those who contemplate being in San Francisco during that week, to make reservations immediately, and in making reservations to not only state date of arrival but also date of departure.

When the annual convention of the American Veterinary Medical Association, the Hoo Hoos (Lumbermen's Association) and the Native Sons and Daughters of the Golden West decide

to sojourn in one city during the same week, in the language of the street poet, there will be something doing.

Another warning the committee desires to submit is, that those who journey to the Coast next September must realize that in the climate of San Francisco and the extreme Coast region they will not experience the same caloric conditions that they leave in the East, the South and the Middle West. They should not deceive themselves with the idea that they are coming to a tropical or semi-tropical country and all that it portends. The mean temperature of the Bay region for the year is about 55 degrees. The highest temperature being 89 degrees and the lowest about 35 degrees.

California is a great big sanitarium. Its varieties of climate are unparalleled by any other state or country in the world.

The climate of the Coast is invigorating, stimulating and delightful. It is neither too warm nor too cold. Those who live by the sweat of their brows know no fatigue nor discomfort except from physical exhaustion or the result of overtaxed muscles. While those who live by the exercise of their gray matter yield only to failure on the part of their mental powers.

In the valleys of the interior during midsummer the temperature is much higher, and there is no doubt discomfort at times for those who labor in the harvest fields, the fruit orchards, the vineyard and even in the offices and stores. But the dryness of the atmosphere robs the thermometer of much of its terrors. The temperature experienced in the valleys is less irksome at 100 to 110 degrees than in regions of greater humidity of the atmosphere where the mercury reaches 85 to 95 degrees. Sunstroke is a condition that is practically unknown.

It is invariably the experience of persons coming into almost any part of the state that they take on avordupois, increase in strength, are less troubled with nervous affections, sleep well and acquire a good appetite and improve in health if ailing from any cause. In the Bay region the afternoons and evenings frequently become quite cool due to the advent of a chilly though balmy breeze that comes directly off the Pacific Ocean.

On this account it will perhaps show wisdom and discretion on the part of our visitors if they will put an overcoat or extra wrap in their suitcases, more especially if boat riding or evening outing is indulged in.

On account of the invariably cool nights those who propose engaging in doings nocturnal, automobile joy rides, etc., will

necessarily have to provide themselves with warmer raiment, but this last suggestion, we opine, is entirely adventitious as far as visiting veterinarians are concerned.

Respectfully,

R. A. ARCHIBALD,
Chairman, Entertainment Committee.

CHICAGO, May 4, 1910.

Editors AMERICAN VETERINARY REVIEW:

At a recent meeting of the Chicago veterinarians who have signified their intentions to attend the San Francisco meeting, the special car or special train proposed by Dr. W. Horace Hoskins, was discussed at length. It was decided to request all those who look favorably upon the project to write the undersigned at once in order that the arrangements may be made early.

The one difficulty foreseen is that of deciding upon a day of departure that will be agreeable to all. It was predicted that while some may desire to go post-haste to the meeting, others may prefer a week or so of sight-seeing en route. It is very plain that those belonging to college faculties will have no time for sight-seeing on the return journey, since they will barely have time to reach home for their opening exercises.

For these reasons two days of departure are herewith proposed: August 24 and August 31. Those inquiring will therefore signify their preference between these two days. Let us hope we may be able to send out two special cars, or, better still, two special trains, one on each of these dates.

The route proposed for the out-going journey is from Chicago to St. Paul, to Seattle, to San Francisco.

Very respectfully yours,

L. A. MERILLAT.

1827 Wabash Avenue.

CLEVELAND, O., May 10, 1910.

Editors AMERICAN VETERINARY REVIEW, NEW YORK:

The trip to California is a pleasure looked forward to by all of us. And now that the opportunity presents itself, we owe

it to ourselves to arrange said trip so as to see the most we can for our money.

To go by oneself and not having been over the trip, we would not expect to take advantage of our time, but would waste much of it, and at an increased cost to ourselves. So, to have a man of experience, from having taken said trip several times, prepare and submit an itinerary, say by circular or through the REVIEW, as to cost of trip, including side trips of interest at points we all want to see on the trip, would be a benefit to us all; and he could, and would no doubt, so arrange it as to economize on time, at the same time have us as near as possible, many points by day, rather than by night. The railroad fare and sleeper is only a minor part of cost, and I think by all means, have excursion special train, Pullman and diner, for trip; so as to be able to park same at points of interest if so disposed; and arrangements of the time and entertainment at meeting can be so fitted into itinerary as to go nicely, which will bring cost of trip within reach of many desirous of taking it. When, if without such arrangement, with the rates already mentioned, to see the many places of interest, the extra cost and dinner service will make it prohibitive to many. I hope arrangements along these lines may be worked out in the time we have to do so.

Respectfully,

A. S. COOLEY.

SPOKANE, WASH., May 9, 1910.

Editors AMERICAN VETERINARY REVIEW,
New York City, N. Y.:

I am in receipt of a letter under date of May 5 from Dr. Archibald in which he quotes a part of a communication from you relative to the special train from Chicago to San Francisco via St. Paul, Spokane, Seattle, Tacoma and Portland.

I am enclosing a copy of a letter from Dr. Lyman by which you will see that Dr. Lyman and I are working in hearty accord for the special veterinary train from Chicago to San Francisco via the Burlington to St. Paul, Northern Pacific to Portland and Southern Pacific to San Francisco. I am also enclosing the proposed itinerary covering this train which shows that the members of the party of this train will be guests of the Veterinary

Pacific Northwest during their trip through the Northwest and especially the guests of the Chamber of Commerce of Spokane from 12 o'clock at noon to 8 p. m. of September 2, and guests of the Seattle Chamber of Commerce from 10 a. m. to 8 p. m. September 3. We shall try to make these two short stops as pleasant as possible.

Very truly yours,

S. B. NELSON.

NORTHERN PACIFIC RAILWAY COMPANY.
Traffic Department.

701 Sprague Avenue, cor. Wall Street,
SPOKANE, WASH., May 6, 1910.

DR. S. B. NELSON,
225 Indiana Avenue,
Spokane, Wash.:

DEAR SIR—In compliance with your personal request beg to submit herewith proposed itinerary covering American Veterinary Special, to leave Chicago at 12.01 a. m., August 31, en route to San Francisco:

Leave Chicago	12.01 a. m.	August	31
Arrive St. Paul.	1.00 p. m.	"	31
Leave St. Paul.	1.30 p. m.	"	31
Arrive Spokane	12.00 m.	September	2
Leave Spokane	8.00 p. m.	"	2
Arrive Seattle	10.00 a. m.	"	3
Leave Seattle	8.00 p. m.	"	3
Arrive Portland	2.30 a. m.	"	4
Leave Portland	3.00 a. m.	"	4
Arrive San Francisco.	10.00 a. m.	"	5

I sincerely trust you will be able to secure a sufficient number of delegates to justify the operation of this train, and if further assistance is desired do not hesitate to command me.

Yours truly,

W. H. UDE,

City Passenger Agent.

OBITUARY.

ELDON L. LOBLEIN, D.V.S.

Dr. Eldon L. Loblein died at his home in New Brunswick, N. J., March 24, 1910, at the age of 49 years. Dr. Loblein was a native of Bermuda, W. I., where he lived until he came to New York City to pursue the study of veterinary medicine. He graduated from the American Veterinary College in 1884 and entered into general practice in New Brunswick, where his ability as a practitioner, honorable methods and genial manner soon surrounded him with a large practice and endeared him to all whose privilege it was to have known him. His city expressed its appreciation of his honorable citizenship by making him a school commissioner. In the veterinary profession he stood for everything that aimed at its elevation and was an active member both in his state organization and the American Veterinary Medical Association, having been president of the former in 1905 and 1906.

His funeral was attended by a delegation of veterinarians from New Jersey, New York and Pennsylvania, also by the Elks and Odd Fellows. Dr. Loblein is survived by a son, who is a third-year student at the University of Pennsylvania Veterinary School.

EARL W. SUNDERLIN, V.S.

Dr. Earl W. Sunderlin died at his home in Auburn, N. Y., May 14, from a complication of diseases. The doctor had been ill for a year, but was not taken seriously until a week prior to his death, when he took to his bed, from which he never rose. Dr. Sunderlin graduated from the Ontario Veterinary College something less than twenty years ago and had been practising in Auburn fifteen years at the time of his death. He enjoyed a very lucrative practice and had a host of friends. He is survived by his parents, a widow and a brother.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TRAUMATIC PERICARDITIS [*Robert Barker, M. R. C. V. S.*].—Practicing in mining districts and around towns the writer has seen many cases. At the onset the symptoms are suggestive of stoppage of the bowels; a short painful grunt, the animal very dull and having no appetite. There is a specific symptom, viz., the animal stands with its head down, muzzle near the ground. When this symptom is present Barker never hesitates to diagnose a foreign body in the heart. He recalls two cases: 1. A fat bullock which was to be sold and killed. He would lie down, extend the head, draw up his feet alternately, grind his teeth. When he was slaughtered a piece of wire was found penetrating the heart. This is the only case when an animal having acute pain, was laying about most of the time. They generally stand up. 2. Cow reported having stoppage of the bowels. With the ordinary symptoms she stood up with head down. At post mortem, a piece of wire was found entering the pericardium through a hole from the stomach and diaphragm.—(*Veter News.*)

PECULIAR CASE OF TUBERCULOSIS IN A HORSE [*Reginald H. Smythe, M. R. C. V. S.*].—Eleven-year old gelding had been doing badly and slowly losing appetite and flesh. He is dull, emaciated and hidebound. Temperature is 102 F. His teeth are very irregular and sharp. Perhaps the trouble was due to indigestion. The teeth are fixed and suitable remedies prescribed, and for a short time he seems to improve. He is again taken ill with a temperature of 103 F., and constipation. He is placed in closer observation and it is discovered that he

has a very dry cough and shows tenderness under palpation of the right lumbar region. Treated on general tonic principles and not improving after a run out to grass, he is destroyed. At the autopsy several growths of various sizes were found attached to the mesentery and some smaller ones on the diaphragm and peritoneum. On section, these growths showed caseation and every appearance of enlarged lymphatic glands. Unfortunately tuberculin test had not been employed.—(*Veter. News.*)

RUSTY NAIL IN A SEAL'S FIN [*J. Donaldson Pottie, M. R. C. V. S.*].—A performing seal was lame on one of its fins. After a great deal of trouble to control it, the cause of the lameness was found to be a rusty box nail fixed in the fin. This was extracted with forceps. The part was dressed with hydroxyl and hot water and in three days the animal was able to resume its performing duties. The treatment by hydroxyl seems to have been most beneficial and is highly recommended by the author in the dressing of wounds of horses where blood poisoning and tetanus may occur.—(*Veter. News.*)

FRACTURES OF THE HUMERUS [*D. Silvestro Rabagliati*].—Referring to reading remarks on this subject the author writes to say that he has often seen similar injuries occurring in Cairo with loaded or unloaded camels, working on hard and slippery roads. He has also seen one case of fractured femur, but humerus seem to be the bone most commonly fractured. The treatment followed by the natives for this or indeed for any injury of the leg of camels, is a sort of modification of Bier's treatment, unless they resort to firing. They tie a light cord around the leg just below the elbow, not enough tightened to cut off the circulation, but sufficiently to cause considerable œdema and swelling. This treatment is as a rule carried out irrespective of the injury being above or below the cord; which is left on several days. Recovery is often effected. The writer has not tried treatment of such cases, as generally the owner has preferred to have the animal destroyed to save expense. He is then killed for food.—(*Veter. Record.*)

UNUSUAL INJURY TO THE GASTROCNEMIUS MUSCLE [*C. Herbert Sheather*].—Driven wheeler in a green team, this horse slipped and fell under the pole. After getting up he walked with difficulty half a mile to reach home. Seen in the afternoon

he is slightly lame on the near hind leg while trotting. He has a diffused swelling below the stifle joint. The next day he is unable to carry weight on the injured leg, the hock is down to a level lower than the right side, the fetlock is flexed, the toe resting on the ground, and the stifle joint extended. The swelling behind that joint has increased much. The gastrocnemius tendon and the os calis are normal. The animal is kept in slings for eight weeks; and not improving, he is destroyed. Post mortem shows that the outer head of the gastrocnemius muscle had pulled away from the border of the supra-condyloid fossa a piece of bone, and that there was a considerable amount of hard, white fibrous tissue around the seat of injury. There were also several small pieces of bone loose. The other part of the muscle was normal.—(*Veter. Record.*)

FRACTURES IN FOALS [*H. Snarry, M. R. C. V. S.*].—The record of two cases successfully treated. In one a carting foal has a fracture above one hind fetlock. The limb was fixed with a strong bandage made of harding and covered over with a woollen band. A Gooch's splint, cut to length and width required, was applied around the leg and covered with plaster bandage. The apparatus was left for three weeks untouched, when it was changed. Ten days later it was taken off for good. There were some small cutaneous sores which were properly attended to. Perfect recovery with little blemish. The second case occurred in a sucking colt, which had a fracture of the radius about its lower third. The treatment was the same as in the first case and in 48 days the recovery was also perfect.—(*Ibidem.*)

UNUSUAL LESIONS OF THE FOOT [*T. Fenn. Addison, M. R. C. V. S.*].—An aged cart horse had, on a few occasions, been lame and had suppurating abscesses in the immediate centre and front of the coronet. The difficulty returned another time as a swelling, painful and soft in the centre. Resisting to fomentations, poultices, deep point-firing and blistering, the horse was destroyed as a matter of economy. On examination at post mortem, the enlargement was found to consist of dense fibrous tissue, which, being removed, exposed a deep cavity in the centre of the anterior surface of the os coronæ. Around this, there was a great deal of exostosis. There was another cavity involving part of the articular surface opposed to the os pedis. Several

channels were also found running in all directions through the soft structures of the foot. There was also large side bones and a hole about the size of a small seed in the centre of the articular surface of the os pedis.—(*Veter. Record.*)

TWIST OF THE DOUBLE COLON [*Prof. E. Wallis Hoare, F. R. C. V. S.*].—Seven-year gelding showed colics with intermittent struggling spells; striking the walls of his box with his fore feet, laying on his back with hind legs crossing each other in a peculiar manner; when attempting to get on his feet he sat on his haunches and remained in that position for some time. Very slight tympanitis, abdominal muscles hard and tense pulse very weak, countenance anxious, mucous membranes injected. Chloral hydrate was administered. Death the same day. **AUTOPSY:** Peritoneal cavity contained yellow colored serum. Cæcum out of its usual position, with apex close to the diaphragm. Intestines very anemic and empty. Double colon was dark in color and the second and third portions were found to have a double twist close to the suprasternal and diaphragmatic flexures.—(*Veter. Journ.*)

SUPRASCAPULAR PARALYSIS [*Capt. G. P. Knott, A. V. C.*].—Australian mare gets the off foreleg into a deep hole and falls violently on the right shoulder. She rises immediately, but when called to move she acts as if she had fracture of the shoulder. The symptoms were typical: "When she walks in a straight line the shoulder, when weight was placed on the limb, was jerked away from the chest wall and in fact looked as if only held in place by the skin. The leg was carried in adduction; no pain, heat or crepitation excluded possible fracture." **TREATMENT:** At first for a few days she was put in slings and then turned loose in her stall with sawdust bedding. The shoulder was treated with massage and stimulating liniments. The scapular muscles became first much atrophied; but after a while the animal began to improve. Blister was applied, then moderate exercise, short trot and finally returned to work.—(*Ibidem.*)

A BULL DOG CALF [*R. Waghorne, V. S.*].—Concise record of the delivery of a young cow which went her full term and was half an hour in labor. She was delivered of a calf with a thick, short skull, a face very like that of a bull dog, and a short, squat body with a foot at either corner, but without any leg

bones whatever. He survived one hour, shaking its head and moving his eyes.—(*Ibidem.*)

AN INTERESTING SPLEEN—A CASE OF HODGKIN'S DISEASE [*D. Fortwell, M. R. C. V. S.*].—Well-bred bull dog, nearly six years old, has been well up to four months ago, when it was noticed that he would get tired after moderate exercise, breathed abnormally, coughing and retching occasionally. Two enlarged glands were observed six weeks ago in the throat and near the front part of the sternum. They grew bigger and became as large as a hen's egg. Then two others developed in the hind quarters, one on each leg, above the hock in the gastrocnemius muscle. The temperature varied between 102° and 103° F. Another tumor was removed from the groin, where it was in the position of an inguinal testicle. The right testicle was also taken away. The dog kept on wasting away and was finally chloroformed. Five tumors were found in the pleural cavity. They were the size of a walnut. There were two others on the mesentery. The liver was enlarged. The kidneys were normal. The spleen was enormously enlarged and weighed two pounds five and a half ounces. Sir John McFadyean pronounced the case one typical of Hodgkin's disease.—(*Veter. Journ.*)

CHRONIC NEPHRITIS IN A DOG [*Prof. E. Wallis Hoare, F. R. C. V. S.*].—Six-year old fox terrier has gradually become emaciated, his appetite is capricious, and marked anemia is a prominent symptom. Heart shows marked increased impulse, palpitations with the slightest exertion. His respiration is accelerated. No thirst, no renal symptom. One morning the dog is found dead. The right kidney is very much atrophied; its capsule adheres firmly and the surface of the organ is irregular. In section the texture was so tough as to almost resemble cartilage. The left kidney is not so extensively diseased, but similar to the other. Both organs were pale. The left ventricle of the heart was much hypertrophied.—(*Ibidem.*)

TRANSMISSIBILITY OF HUMAN INFLUENZA TO CATS [*O. Stinson, Assistant to E. R. Smythe, M. R. C. V. S.*].—The inhabitants of the town and others surrounding had influenza. During the convalescent period of some of them their cats became diseased and presented similar manifestations or troubles of deglutition; inflamed condition of soft palate and larynx, peculiar wheezing in respiration. The history of four cases is

given and points to the transmissibility of the disease from the owners to the cats: 1. Cat had difficult deglutition, lassitude, sneezing, discharge from the nose, fetid diarrhea. The maid servant had influenza three days before and the cat spent most of its time with her. 2. Mixed-bred cat, had sore throat, sneezing, discharges from eyes and nose. Belonged to a doctor where the whole household had an attack of influenza. 3. Common cat. Attempted deglutition, discharges from eyes, nose and mouth, vomiting, gastric catarrh. Infected by an occupant of the house. 4. Persian cat. Difficulty in swallowing, sneezing, pneumonia, cardial failure and death. Belong to household where every one recovered from influenza. Many other similar cases were also observed and are not recorded to avoid repetitions.—(*Veter. News.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

HEMATOPINIC PITIRIASIS IN A HORSE [*Emeritus Professor F. Pouch*].—This horse was one of a stable where the best conditions of hygiene were carried out. Cleanliness, grooming, light, etc., etc., were as perfect as possible, although a stable for working horses. One day he presented a series of peculiar, almost alarming, symptoms. Local sudation on parts of the body, small cutaneous excoriations at the base of the tail, the horse suddenly bites himself with rage here and there on his legs. He strikes with his hind feet. He crouches down and against the one who passes his hand over his rump or his left thigh or while the fetlocks are examined. He almost will fall in his efforts to relieve the itchings. The biting rage increases; it becomes more frequent and more violent. The animal is constantly in motion, his eyes are brilliant and their glances raving. His features are expressive of great pain. The horse is literally raving mad. And yet he has no rabies; he drinks with avidity a pail of water. A dog is brought to him for the "dog test" of rabies, the result is negative. Diagnosis is very obscure. It is perhaps a nervous manifestation and bromide of potassium is given internally and ointment of muriate of cocaine prescribed externally. Some improvement follows. But later, in three days, after returning from work, the same symptoms

reappeared, although with less severity and permitting a close examination of the skin. All over the body there are little elevations, some with the hairs scraped off. These suggest the idea of the presence of a cutaneous parasitic disease, and treatment prescribed accordingly, viz., general clipping of the whole body, application of Helmerich ointment to be followed by thorough washing. While the clipping is going on, an immense army of hematopinus macrocephalus was found swarming so thick that even the play of the clipping machine was interfered with. And yet the general hygienic conditions in which the animal was kept, as well as the fact that no parasitic disease had or did exist in the stable and again that two months previous the horse had been clipped, all had justified the exclusion of parasitic trouble. One more animal became affected also. Petroleum and cresyl brought about permanent relief.—(*Rev. Veter.*)

PROLAPSUS RECTI IN A MARE AFTER DIFFICULT LABOR [*Mr. Guilhem, Army Veterinarian*].—Six-year old mare delivered a colt and following had a prolapsus of the rectum. For three days the owner attended to her. But, as the trouble always returned, and as it was summer, the condition of the rectum became very serious and complicated with gangrene. The protruding portion is much inflamed. It has the size of a man's head and the rectal mucous membrane is purple, congested, blackish in some parts, and there is a very offensive odor of gangrene. There are many small white worms concealed in some of the folds of the mucous membrane. Amputation is the only chance for treatment. After antiseptic washing, the animal is cast and anesthetized. The protruding mass is carefully drawn out so as to operate on structure less diseased, and amputation is made near the margin of the anus, by making first, a transversal section involving the upper half of the prolapsed rectum and sutured with very close stitches. The lower part was afterwards excised and sutured in the same manner. Hemorrhage was not abundant. Irrigations, antiseptic and astringent washings completed the operation. The animal did well for two days, but on the third, symptoms of gangrenous septicemia appeared and the mare died in a few hours. At the post mortem all the posterior part of the colon was found gangrenous. Liver and spleen congested. Connective tissue around the anus infiltrated. The sutures at the anus had held very well and it is probable that if the animal had been operated earlier she might have been saved.—(*Rev. Veter.*)

MELANOSIS OF THE CRANIAL CAVITY IN A HORSE [*Prof. Bourdelle*].—A very light grey old horse was killed for market. After making a longitudinal section of the head and removing the brain, malanosis of the right portion of the cerebral cavity was discovered. This melanosis was situated on the limit of the frontal, temporal and sphenoidal fossa, and formed a mass resembling a black berry in size and aspect. It was adherent to the cranial wall, was very black in color and regularly lobulated. It had no adherence with the corresponding cerebral lobe. On the surface of this, the arachnoid and pia mater were infiltrated with melanotic pigment. The cerebral hemisphere had been depressed by the tumor which has then made a fossa quite deep for its reception. No other melanotic deposits were found in any part of the animal. From inquiries made about the condition of the horse during life, it was learned that he had never shown any symptom indicating the presence of the tumour nor of the pressure that the growth must have exercised on the cerebral substance.—(*Revuc Veter.*)

ENORMOUS HYPERTROPHY OF THE MAMMAE IN A SLUT [*Prof. G. Petit and R. Germain*].—Hypertrophy is rare in sluts. This animal was four years old. She was pregnant. She was presented for treatment on account of this hypertrophy. No history of her case could be obtained. The mammæ of this slut was almost as big as her whole body. They form a big mass, hard, tense, painless and seemed not to interfere with the animal. She could not be delivered and died eight days after. At the autopsy the various mammæ were easily isolated, perfectly defined without œdema or infiltration. Their lobulation was perfect and by pressure a few drops of whitish fluid could be squeezed out, having no purulent character. The histological examination failed to discover any alteration. The structure being that of a normal organ in lactation. There was no inflammation nor tumor; it was only a tremendous hypertrophy.—*Bullet. de la Soc. Cent.*)

GENERALIZED PRIMITIVE EPITHELIOMA OF THE COLON IN A HORSE [*Mr. Laurent, Army Veterinarian*].—This case is unusually interesting on account of its manifestations. It occurred in an old horse of 14 years, of very light grey color. He had always been slack to do his work. One afternoon after a warm day he is restless, moving to and fro as he stands, he rushes against the wall. He seems to be in a state of stupor, with his

eyes partly closed, his respiration and circulation but slightly accelerated, no perspiration, but the eyes are very congested and saffron color. To make him turn is difficult; it requires the help of several men to prevent his falling. Five kilograms of blood are extracted by venesection. The blood is black and thick. After this bleeding the horse is taken to a shady spot. Half an hour later when attempt is made to move him to his stall, he is found stiff all over, unable to stir ahead or backward; he is a rigid and inert post. One gramme of caffeine is injected and after 10 minutes he moves, his head is carried up, the eyes are wide open and brilliant and he goes to his box where he takes a good meal. The next day he received 35 grammes of aloes. For 5 days his general condition is improving and outside exercise is ordered. He cannot go far and as he is turned back he falls down, gets up and then is taken with a typical crisis. He takes the position of an animal pulling a heavy load, his body carried forward with his neck contracted, the jaws tightly closed and stepping on the same spot from one leg and then the other. Respiration is hurried, eyes wide open, pupils dilated, head turned to the left but slightly twisted to the right. These symptoms lasted ten minutes and after that the animal looked for his food. These crises, however, became more frequent and followed by longer periods of comatose condition. Iodide of potash gave no improvement. Caffeined physiological serum was also injected and at first did wonders, but the improvement that followed its administration did not last and one morning the horse was found with impossibility of swallowing, by complete paralysis of the muscles of deglutition. All treatment became useless; the horse died in a complete state of marasm. **Post MORTEM:** Intestinal mass entirely empty. Liver shows on its right portion tumors of various size, rounded, mammillated, elastic in consistency, and yellowish on section. On the right side of the fleshy portion of the diaphragm there is a similar neoplasm as big as an egg. All the lymphatic glands of the abdomen are involved in the cancerous invasion. At the diaphragmatic curvature of the colon there is also a pedunculated tumor weighing 1,050 grammes. It is a typical epithelioma. In the cranial cavity the right cerebral lobe is congested. The meninges are thickened and on the surface of the frontal lobe is found a tumor similar to the others. It is surrounded with a soft peritumoral degeneration containing thick creamy inodorous fluid. All the other organs of the abdomen and thorax were

found healthy with the exception of purulent sinusitis.—(*Ibidem.*)

PULMONARY EMBOLY BY PIECES OF TROCAR [*M. Prevot and Barrier*].—This is the result of a post mortem of a horse with the following history. In March, 1907, while being bled with a trocar, a horse made a sudden move, the canula of the trocar broke and a piece dropped into the right jugular. Since the animal has not seemed to be incommoded and has stood on the same vein numerous bleeding and intravenous injections. As he was getting old, being twenty, and the quality of his serum was not as good, he was destroyed in 1910. The autopsy which was made allowed researches for the piece of canula of the trocar. The jugular and heart were free from any lesion. The pulmonary artery was carefully examined and in one of its divisions, near the periphery of the right anterior lobe, the foreign body was detected surrounded by a very compact fibrous envelope. The caliber of the artery was entirely filled by the canula and no apparent lesion of the pulmonary tissue could be found. The piece of canula measured six centimetres in length.—(*Ibidem.*)

SUPPURATIVE ASCENDING CHRONIC ANGIOCHOLITIS IN A CAT [*Mr. Roquet*].—When it has an intestinal origin, inflammation of the biliary ducts is designated as ascending by opposition to when it is of bloody origin, when it is called descending. The following is the first described in veterinary literature. The cat was eight years old. No clinical history; one month ago he had symptoms of acute gastro-enteritis. Shortly before his death he was much reduced in flesh and was unwilling to take any kind of food, solid or liquid. He died in a state of coma. In opening the abdominal cavity and removing its contents, the liver calls at once the attention. It is slightly enlarged, dark brown in color and covered with greenish spots. It is firm and though its capsule shows numerous little light yellow or grey yellow deposits of small size. They are rounded or oval and do not project on the surface of the organ, differing in this from tuberculous granulations. An incision through the liver reveals the presence of the same lesion in the parenchyma of the organ. In the scrapings, streptococci, staphylococci pyogenes are found under the microscope. The biliary bladder contains little thick viscous bile. Hepatic lymphatics are swollen. In the pancreas

there was a small nodule of a white yellow color. The stomach and small intestines show lesions of acute catarrhal gastro-enteritis. The great omentum was atrophied by the absence of adipose tissue. The microscopic examination of the lesions established beyond doubt the intestinal origin and the complications of catarrhal gastro-enteritis.—(*Journ. de Zootech.*)

SUPPURATIVE INTERNAL OTITIS IN A DOG [*M. Matharan, Army Veterinarian*].—This fox terrier was fourteen months old and since some time has been suffering with auricular catarrh of the right side. A long series of various treatments has been tried but without any result. The suppuration has never stopped. The dog fed well and was in satisfactory condition. As the discharge was becoming foetid and as there was no improvement, after a careful examination of the mouth, and nasal cavities, surgical interference was decided. The dog was anesthetized with intraperitoneal injection of chloral and morphia and an incision made at the base of the ear on the outside. As the external ear presented nothing abnormal, the membrana tympani was punctured and an exploration revealed the presence of spikelets of brome in the middle ear. These were extracted and after free washing the wound was dressed aseptically. Unfortunately the animal died three days after with pulmonary congestion. To anesthetize the dog the ordinary dose was used, but it gave rise to very alarming symptoms of syncope which required more than two hours before they were overcome and on that account the author suggests the injection intraperitoneal of one cubic centimetre by kilogramme of the weight of the animal, of a mixture of muriate of morphia 0 gramme 50 centigrammes, chloral 10 grammes, water 100 grammes. This solution has never given any bad results and is perfectly safe.—*Rev. Gener. de Medec. Veter.*)

BELGIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

TUBERCULOUS PSYCHOSIS IN A CAT [*George Hasse*].—This animal, which had habits of running out, becomes suddenly sedentary. Her abdomen begins to get large. She has not yet

shown true psychical symptoms except after some little time. Her appetite becomes more and more voracious every day, she is more gay and more active in her actions. She also becomes more affectionate for the people around her, following her master at every step and asking to be petted and caressed. She wants to be coaxed before she partakes of her meal. These manifestations are considered by the author as psychical characters of her ailments, similar to those which are observed sometimes in human beings. Consulted for her ascitis it was advised to chloroform her. At the post mortem 2,165 grammes of fluid were taken from the abdomen. There were lesions of tuberculosis in both lungs and in the parietal peritoneum; they contained tubercle bacilli.—(*Bullet. Medec. Veter. Prati. Malines.*)

PSOROPTIC MANGE IN DOG [*Prof. Hebrant and Antoine*].—Frequent in horses, sheep and rabbits this affection has not yet been recorded as occurring in dogs. The case described by the authors relates to an adult pointer which had a generalized skin disease. The entire surface of the body was covered with spots, hairless, and where the skin but slightly inflamed, was covered with scabs. There was *no itching*, but the animal had a characteristic odor of mice. The examination of the cutaneous crusts made with the microscope, allowed the discovery of the acarians of the psoroptic gender, with their eggs and larvæ. The presence of this parasite, which lives only on the surface of the skin explains the absence of the itching and of the lack of cutaneous inflammation. The origin of this affection in this dog is explained by the authors by the presence of numerous rabbit houses close by where mangy animals were kept.—(*Annal. de Bruxelles.*)

ANTISTREPTOCOCCIC SERUM IN PURPURA [*Mr. C. Verlinde*].—Taken with distemper shortly after being bought, a five and a half-year old horse had some difficulty in regaining his health, and as he is about fairly recovered he presents suddenly evident manifestations of purpura. The left hock is first taken. Then the right and both knees. They are swollen and the animal moves with soreness and difficulty. There are petechia in the nose and also a bilateral nasal discharge. Temperature is up to 40.1° and 40.5°. The swellings rapidly progress. Both hind legs are taken up to the perineum and extend upward and forward. They go higher than the knees. Two injections of poly-

valent serum are made. Slight improvement is noticed the next day. New injection. The horse is so much better that no injection is made the following day; but then there is a relapse. The swellings which had reduced have regained their size. There is one under the chest extending to the abdomen and sheath. The head is enormous, hippopotamus-like. Tracheotomy has to be performed. Two injections of serum are followed by gradual amelioration, which this time is kept up by the use of serum resorted to for five days more. The tracheal wound is allowed to cicatrize and finally the horse completes his recovery and resumes his work.—(*Bullet. Medec. Veter. Pratiq. Malines.*)

SPASMS OF THE DIAPHRAGM IN A COW [*H. R. Bredo*].—A cow, said the owner, had obstructions of the oesophagus. She is a fine Dutch animal which, instead of ptyalism and tympanitism, has a very accelerated respiration, difficult, principally abdominal, loud and spasmodic. The mouth is kept open, the tongue is hanging, the inspiration is short and jerky. Respiratory movements are isochronous with cardiac beatings. Auscultation reveals no lesions in the lungs. Spasms of the diaphragm are diagnosed. The symptoms passed away of themselves. The cow had another spell the next day. Several months later the animal had an abscess on the lower part of the abdomen, on the left side, and near the false ribs. Opened, a large quantity of pus escaped and in it a piece of wire was found. The author believes that it was the original cause of the spasms manifested on two occasions by the cow.—(*Ibidem.*)

CRYPTORCHIDY AND EXTERNAL HERMAPHRODISM IN ANIMALS BORN OF THE SAME STALLION [*Prof. Lienaux*].—This subject was a stallion which had a small penis with small sheath placed way behind, between the hind legs. Two years old, the subject has genital organs so disposed that he may be taken for a mare. He has no visible testicles and in the inguinal region there are two mammies. Below the anus, there is a kind of vulva, vertical slit, about 15 centimetres long, with two thick cutaneous lips or folds which unite to acute angle upward and downward, forming a round commissure below, in which is detected the head of the penis with its urethral canal bent backward. The animal micturated like a mare, he was of kind disposition, but became excited approaching mares and then he entered in erection; the penis protruded a few centimetres only,

and assuming an horizontal direction backward. The animal was evidently a male individual. Castrated, the testicles were found both in the inguinal canal close to the peritoneum. The same stallion, father of the above, had three other colts. One had the penis and sheath well formed, but situated a little backwards. He had no testicles, but two udders which were normal. The testicles were well up in the inguinal canal. The second had the penis and sheath half way between the inguinal region and the anus. As he grew old, these descended some. The testicles were absent; mamnies well developed. Castrated, the testicles were found up in the inguinal canal. In the third, the sheath and penis were like in the preceding animal, but more rudimentary and situated farther back. There was double inguinal cryptorchidy. The udders were rudimentary.—(*Annal. de Belgiq.*)

CONTRIBUTION TO THE STUDY OF UTERINE LACERATIONS IN Cows [*Mr. H. Bredo*].—For reasons of economy more than any other the author, when he first went to practice, used to recommend the slaughtering of animals which were suffering with such injury, when it occurred as immediate consequences of difficult labor, a torsion of the uterus or by manipulations executed by other parties. But having afterwards noticed the resisting power of bovines to vaginal and uterine lesions, and making closer study of the pathogeny of the accidents, he changed his opinion. Indeed in taking into consideration that a gravid uterus presents a volume ten times superior to that in state of vacuity and that consequently a wound of 10 centimetres in length would measure at the most but one when the uterus had resumed its normal dimensions and again that the edges being more or less swollen and thickened, the wound would almost be completely closed, it became evident that although serious, the accident was not necessarily fatal or incurable; especially if the injury was located on the upper or lateral planes of the organs and under such considerations, Bredo concludes with four principal indications: 1. Extract the contents of the uterus. 2. Stimulate the retraction of the uterus with cold compresses over the loins and back. 3. Allow a diet of easy digestion. 4. Watch the patient and do not interfere with drugs unless necessary. Cases of recovery are then described by the author, eight days being necessary to consider the animal as completely recovered.—(*Bull. Medec. Veter. Prat. Malines.*)

SOCIETY MEETINGS.

FOURTEENTH ANNUAL MEETING INDIANA VET-
ERINARY MEDICAL ASSOCIATION, ROOM 12,
STATE HOUSE, INDIANAPOLIS, IND.,
JANUARY 12-13, 1910.

Wednesday Morning, January 12, 1910.

Meeting called to order by President Boor, of Muncie. This is the fourteenth annual meeting of the Indiana Veterinary Medical Association, and it is called to order for any business that may come before it, and also any of the pleasures that go with it, and I think they will come after awhile. Now the first thing on the program is the roll-call. I believe that some members may be surprised if their names are not called. I don't know the standing any more, but do know when a member is in arrears a certain length of time his name is dropped from the roll; so if your name is not called you will probably find that you are in arrears and you want to see the secretary. Call the roll.

Roll is called with an answer of only fifteen and the room well filled.

President Boor—You have heard the calling of the roll. Are there any remarks to be made? If not, the reading of the minutes will come next. Secretary, read the minutes of the last meeting.

Minutes read.

President Boor—You have heard the reading of the minutes. Is there anything in connection with them that you wish to remark about or change? If not they will stand approved as read. Approved.

President Boor—I see the next thing on the program is the president's annual address. Of course I know that it has been a custom for the president of this association to make a very brilliant address upon this occasion. They have all been orators up to the present time. I am not an orator; far from it. I could not make an address if I wanted to ever so bad, but I will make

a few remarks to you along the lines in which I believe we are, or at least should be, interested.

Now we have made a great deal of progress along veterinary lines in the last twelve months, and there is one thing that I want to mention particularly, and that is relative to the use of serums. Now we have been going ahead and using serum for vaccination and injections of all kinds and taking it for granted that they were up to standard, but we didn't know what the standard was probably; in fact I don't. I don't know the basis from which the unit is derived, but the United States government ought to look after the standardization of the antitoxins or units contained in the serum used for tetanus. I think this is a step in the right direction, and I also think that it is the duty of this association to take cognizance of the fact, and I think the secretary should be instructed to notify the chief of the Bureau of Animal Industry, Dr. A. D. Melvin, that we heartily endorse the step taken in this direction, not only the antitoxin used in tetanus, but also of other serums used, that they should be standardized. That they should have a definite strength, and this stamped upon the bottle. We use the preparations and we get ill results; it reflects upon us and not the manufacturer. We have to charge a pretty good price for the use of these preparations, and when you go into a man's pocket and don't do him any good, it is hard upon the practitioner, and you get an ill repute. We should look after this matter not only as an association, but as individuals. And further I wish to say something in regard to the work of the entertainment committee in getting papers for the meetings. Now, gentlemen, this is not right. We should all endeavor to help this association along. Each individual member will say "I can't write a paper that will be of interest." That is not true. There is not one here that has not had an interesting experience, or a new idea at least to some one else. You are all observant; that is the method you have of diagnosing your cases. There is not one here but that has ideas, and that very fact fits you to write a paper and help disseminate the idea to others of our profession. The learning that we get by observation we should bring here and pass it around, as it were, and thereby go away, all of us, better for having come to the meeting and given our widow's mite. We don't want the young members to stand back, because they have only been out of school a year or two, and when they are invited to contribute a paper we would like to have them come forward and do their best, and we will stand for it.

Secretary's report read and approved.

President Boor—What shall be done with the report of the Legislative Committee? It seems to me that this report, in so much as it was in the hands of the committee, could be dispensed with, except the reading of the final result, and if this is the pleasure of the association we will simply have the footings. Secretary reads footings which show that the amount raised was \$60.00 short of expended footings, that being made up from the "legislative fund" of the association. Now, gentlemen, this \$60.00, as I understand it, was paid in from the funds that are annually set aside by this association, subject to the order of the State Board. Report accepted.

Treasurer's report showed a balance on hand of \$299.99. Accepted.

Qualification of New Members.—Board of Censors reported favorably upon twenty-four applications.

Dr. R. A. Craig—I move you that this association tender Dr. Melvin its vote of thanks for taking up the serum proposition. I think it ought to go on the minutes of this Association and a copy be sent to Dr. Melvin. Seconded by Dr. Ferling. Carried by rising vote.

President Boor—Secretary is instructed to send a copy of this motion to Dr. Melvin. I wish to say at this time that you are all invited to lunch at 12 o'clock at Pitman-Myers Laboratory; also that a photographer is waiting to take a snapshot of this association as soon as we adjourn.

REPORTS OF COMMITTEES.

Dr. Bronson—I was instructed by the chairman of the Entertainment Committee to report a dinner at 7 p. m. to be served at the Mannechor for 75c. a plate. Roast capon to be the "piece de resistance," and it is to be passed as often as called for, or in good old German style.

President Boor—The next committee is the Legislative, and as Dr. Roberts is chairman and present, I will ask him to report.

Dr. Roberts—The chairman has no report to make in reference to legislative matters, only that we failed getting a bill passed last legislature that we wished passed, but as that is not the first failure we have met with, we are undaunted and hope to have better success next time with that bill or one equally as good. We have at present time an amendment to the old bill to put the state of Indiana on a basis with the other states with

reference to the legislative laws. I think every veterinarian should use every effort possible to get this amendment passed at the next session of that body.

President Boor—We will adjourn until 1 p. m. if there is no objection. Consent.

Wednesday Afternoon, 1 p. m., January 12, 1910.

President Boor—We will take up the literary program; the election of officers will be left over and we will take up the first number on the program, which is "The Hypodermic Syringe; Its Proper Use in Veterinary Practice," by Dr. Herbert Palmer, of Chicago.

DISCUSSION.

Dr. Fleming—In inserting the needle the doctor said to place the thumb over the bulb of the needle and press it down under the skin. In pressing the needle into a horse or dog or such animal, there is little trouble, but in putting it into the hog or cow I have never been able to meet with success. I use the same method in the thinner skinned animals, but with the cow (and I have had a lot of experience, especially in the injection of tuberculin) I have had trouble in getting my needle in. The animal is twisting and turning under you and if you endeavor to force the needle in, it breaks off or bends. I would like the doctor to make clear to me what points he selects upon a cow, steer or bull to make this injection.

Dr. Palmer—When we come to the bovine proposition, it is impossible to get into the skin with one thrust, but I have had no trouble in getting the needle under the skin of the average cow. You ought to have a short needle, and by simply taking and giving one quick thrust, I have no trouble in getting it in blood. It is just the fraction of a second until it is in place; I just force it quick. Don't go up, just force it down and in.

Dr. Fleming—The skin of the neck is very heavy and lays in folds, would you try to put it in at this point?

Dr. Palmer—I believe I have been in as many different localities around a cow as anybody has. It is almost impossible in some cases, and I then go back on the withers and inject there. If you go into a pen, inject one on one side and reach over and inject in another one, and by so doing you can inject four. Have a needle of 15-18 caliber well sharpened, and you won't have so much trouble. At least such is my experience.

Dr. Bartholomew—I happened in by accident and would like to say just a word. I am a doctor of medicine, and have had twenty years of experience with the hypodermic syringe. The plan of subcutaneous injection among physicans of the human body has disappeared long ago. We never put a hypodermic syringe under the skin any more. I think it would be a good suggestion for the veterinarian. Always put it into the muscles; it is easily done and never causes an abscess, and is much simpler. I think if you would use a large syringe, a needle of large caliber, and introduce it into the muscle, you will have no trouble in introducing it, and I consider it easier and simpler.

Dr. Buzzard—I would like to ask Dr. Palmer if there is any difference which way you turn the needle in regard to the slope of the point?

Dr. Palmer—I have never paid any attention as to where the point was, whether toward or from me; I never paid any attention at all. And while I am on my feet I must say that I disagree with the muscular insertion of the hypodermic needle. I believe he would have changed his advice, gentlemen, if he had been working among animals for the last fifteen years. I never saw a hypodermic used any length of time but what there was a possibility of an abscess forming sometime. If you have injected as many doses of irritating material in an animal as I have, you would realize what an abscess means. If you get one, why not have it under the skin instead of in the muscle of the hip, for instance.

Dr. Nelson—I agree with Dr. Palmer on this subject; we don't want the muscular soreness, there is no necessity for it. In cattle I find the least trouble just back of the shoulder, or scapula, and with a short sharp needle and a quick thrust you will have the minimum amount of trouble.

Dr. R. A. Craig—In cattle and horses I always use the subcutaneous method and I find by repointing my needle we have better results. I always put my needle on the emery wheel and grind them and then finish them on the hone, and I find that I can use them on 40 to 50 cattle without repointing it. In hogs we find the subcutaneous method does not work out, as you will get more abscesses than with the intramuscular method, but I prefer the subcutaneous. To be sure you get a muscular wound that discharges two to three days, but outside of that I think it is productive of better results.

Dr. Bronson—I don't want to prolong this discussion, but I do want to say that I began using the hypo. as soon as I left school nine years ago, and I have never used anything but the subcutaneous or intravenous methods and have had so few abscesses that I don't want to change.

Dr. Boor—I think, gentlemen, that the use of the hypodermic resolves itself into a very simple solution, especially in cattle, probably in horses, not so much so in dogs, and that is this: have plenty of needles, short, sharp, stout and clean, and you will have very little trouble.

Dr. Fleming—I would like to ask Dr. Palmer about the amount of antitoxin he injects.

Dr. Palmer—Our method is simply to have a hypodermic needle, to which is attached a rubber bulb connected with the bottle; we pumped the air out of the bottle and forced the liquid up into the tube, into the needle and out; and I have given as high as 200 to 300 c. c. or 500 out of the needle under the skin, and in a few hours you would not be able to detect where the injection was made. Now get this point clearly in your mind; for instance, you wanted to give 1 grain of strychnine subcutaneously; you will get the same result whether you use one quart or one pint of liquid. The strength of the medicine does not depend upon the amount of liquid with which you dilute your tablet to make your injection; so it is advisable to, under general principles, use as little water or solvent as possible.

Dr. Carter—I find that the 10 c. c. syringe filled with the dissolved tablet gets quicker action than a larger amount.

Dr. Boor—Dr. Palmer will have to get the train that leaves shortly, so I think it is right that we thank him for his excellent paper.

Dr. Roberts—I move you that we extend to Dr. Palmer a vote of thanks for his paper on the use of the hypodermic syringe. Carried.

Dr. Palmer—I certainly thank you very much for the privilege of talking to you to-day. I have been in different parts of the United States and certainly it encourages me to see the profession advancing at the rapid rate that I as one of you can see it. I thank you again for the attention given me to-day, and I certainly would be glad to stay your session through, but I must be with the Minnesota Association to-morrow.

President Boor—The next will be "Applied Therapeutics," by Dr. Earl Miller.

Dr. W. B. Craig—There are a great many things about therapeutics I don't understand. As far as understanding the blood current, I for one do not understand it. I don't think we understand it as we will in a short time. I think that serum therapy is something that is coming forward and it will be only a short time until we have definite facts, until we have definite understandings, and all we have to do is to practice prophylactics. The tuberculin test in cattle, antitoxin for tetanus, I don't know much about that; there is a degree of uncertainty about them. Of course there are some who will, and do think, differently, but that has been my experience and observation.

Dr. R. A. Craig—I would like to ask Dr. Miller in regard to the experiments with this serum. I met Dr. Anderson in Chicago a couple of weeks ago and asked him that question, and he said they had a report from practically all of the state organizations, and there was quite a diversity of opinion as to the proper method of producing it, and it was impossible to draw any definite conclusions in regarding to the producing of this serum of vaccination that will meet all demands. The question is really this, the real trouble lies as to the organism that really produces hog cholera. For instance, I have met one man that claims that he has that one organism isolated; another man from Missouri claims to have another organism isolated, but we must be thoroughly satisfied that we have it and be able to produce it.

Dr. Miller—We can produce an immunity against diphtheria, tetanus, certain species of streptococcus, when we infect a horse or cow and produce a toxin; but we wish to produce a vaccine of that particular organism rather than produce a serum of animals that have been made more or less immune.

President Boor—If that is all the discussion, we will have the next, "My Experience with Hog Cholera," by Dr. F. A. Bolser, of New Castle.

President Boor—I think it is only a question of a short time until we will be able to control this disease, as well as lots of others along this line by this method. I suppose quite a number of you have had some experience along the lines laid out in this paper in the last twelve months, so I wish to hear from you, Dr. Axby.

Dr. Axby—In regard to Hog Cholera, I don't know that I have much to say aside from the fact I am glad to say that we don't have much of it. It made its appearance occasionally, but in the nine years that I have been in Lawrenceburg, only one

outbreak has occurred. It was not very severe and existed only in isolated localities. In regard to the serum treatment, I really have nothing to say, only to ask where it can be obtained.

Dr. Bolser—I got my serum from Dr. R. A. Craig, of Purdue University.

Dr. Axby—Did you have any difficulty in obtaining the serum?

Dr. Bolser—Yes, sir; that is one of the difficulties at present. In fact there are a great many difficulties mentioned in this paper, as abscesses, the quantity of serum needed, etc.

Member—Does this serum seem to have any effect upon Swine Plague?

Dr. Craig—The only highly infectious disease we know of in hogs is hog cholera. We are unacquainted with the specific factors of or that produces hog cholera. I don't wish to make the assertion that there is no infectious pneumonia in hogs, because I have met with a case. We believe that there is only highly infectious disease in hogs and that is hog cholera. I don't want to take the time of this association, but I would like to say something regarding the method of producing hog cholera serum. As we have no cultures available for producing the serum, virulent blood is used. Young hogs are given hog cholera by inoculating them with hog cholera blood. These hogs are supposed to develop fatal symptoms in from 8 to 15 days, if not, they are thrown out and not used for blood production. The fatally sick hogs are killed by cutting the carotid artery near the base of the neck; the virulent blood collected and defibrinated and injected into immune hogs. There are different methods of injecting this blood, or producing the hyperimmune as the animal is called, after having received the blood. We use the subcutaneous quick method. This consists of injecting 10 c. c. per pound of live weight, beneath the skin or into the muscles of the inner regions of the thighs or shoulders. The intravenous method is sometimes used, or the blood may be injected directly into the abdominal cavity. After waiting from one to two weeks, the hyperimmune is bled; the fibrin being removed from the blood and a little carbolic acid being added as a preservative. We also bled the animal from the tail, as there is no superficial vein to be used; for this reason we secure hogs with as long tails as possible. A sterile vessel is provided and a small piece of the tail is cut off and the blood collected. These bleedings are made at intervals of one week, and when the ani-

mal's tail becomes so short that we cannot handle it, we have to kill the animal. It is because of the fact that we have to use virulent blood that the serum is so expensive. To Drs. Niles and Dorsey belong the credit for originating the method of serum production. The Bureau of Animal Industry and the various experiment stations are working to perfect the serum, and there has been some improvement since the method has been made public. I believe that within a few years that serum production will be much cheapened. It is surprising how many simple things come up that are important factors in the consideration of the cost of the serum.

Dr. Bolser—What per cent. do you think you save in the herd, in which the disease is just breaking out?

Dr. Craig—We have treated about 4,000 hogs under a great variety of circumstances or conditions, and the reports received show us that we have saved 80 per cent. We are using the serum almost wholly as a vaccine. We use pigs weighing from 40 to 80 pounds in testing the serum. Into two of these we inject 10 c. c. serum and 2 c. c. of virulent blood; two with 15 c. c. serum and 2 c. c. blood; two with 20 c. c. serum and 2 c. c. blood; the 2-3 checks are given 2 c. c. of virulent blood alone. If the pigs injected with 10 c. c. show only slight symptoms of illness, we know that dose won't do; and if our checks that we have inoculated with virulent blood alone do not die, then we have to repeat the test.

President Boor—If that is all the discussion upon Hog Cholera, we will have Dr. Nelson's paper on "Mad Itch or Pruritus in Cattle."

President Boor—I am quite sure that a great many of you, especially those who practice in the country, occasionally come in contact with some of these cases, and you have thought you had rabies. This is a good paper; let's hear from you.

Dr. Roberts—I find this paper one of great worth to the practitioner of this or any other state. In the first place it is the first time that his disease has ever been brought before the veterinarians of this state, and I assure the doctor that there are many of the older practitioners that have been sadly up against it in meeting this kind of trouble. I think he has made the case as clear as words can possible make it, and I assure you that it will be one of the papers that should go down in the history of this association as one of great value. One point I wish to make emphatic, and that is when the disease once sets in, there is but

one termination. It is fatal; there is no treatment that I have found.

Dr. Fleming—I would like to ask the doctor how he can get his purge of sulph. magnesium through; is it strong enough? I think not, for I have met a few cases.

Dr. Nelson—I don't know anything much better in cattle than a combination of glauber salts and oil.

Dr. Fleming—In these cases you have an impaction, have you not? Did you ever use barium chloride? There is an undigested mass in the rumen, and I found that by stimulating the heart and giving them a large dose of barium, I got fair results. I wondered if you had tried it.

Dr. Nelson—No, I have never used it.

Dr. Buzzard—I would like to ask Dr. Fleming if he always gets a good effect from barium chloride in 1 grain doses?

Dr. Fleming—Not always; never give it to horses.

Dr. Boor—Will say this for barium; it is very active, and while I have had some results that I did not want and was not looking for, I have also had good results; but you have to be very careful about using it intravenously, as it will interfere with the action of the heart. I use small doses, 60-70-80 grains, of barium orally. After a while you will find you are having a peristaltic action taking place, and it will last a good long time. It will empty out the bowels, and it will do it much quicker than any other preparation that you can give outside of arecoline which acts very quickly and loses its action very quickly. When you want quick action, you may like arecoline better, but you will find from the oral use of barium that you will get very good results. It seems to me I have heard Dr. Roberts say something about barium chloride.

Dr. Roberts—With reference to barium, I have had a varied experience with it, and the only ill effects I ever had in giving it was late one night when I had a case of impaction, mild I thought; after administering the dose I told the owner I would be at my home, and he could call me if he desired. He did so and told me the animal was lying on its sternum, and that he guessed it was alright and he was going to retire. The next morning he called me stating that the animal had rested well all night, as it was in the same position as when he talked to me the evening previous.

Dr. Catey—I always expect good results from barium, and when we do not get them I think it is of our ignorance of its use in the proper place and time.

Dr. Rogers—I have been using barium for a number of years and I cannot see why Dr. Roberts should fall out with it because he had one patient die. We all use remedies with which we do not get good results. Never use it both intravenously and orally. I cannot say I get good results in the veins, but in the stomach of the horse I do. Never give it to an animal with a weak pulse. I think it was three years before I had anything to happen; it was six miles in the country. I was cold and discouraged with myself and the profession generally. The animal had been sick and they had been trying to get me for twenty-four hours. I examined the horse and found that he had a congested mucous membrane. I thought I had used it in just such a case with good results. I called for warm water and used seven grains and one-quarter grain digitalin. I made the injection; the animal opened its mouth and fell dead. I discontinued it I think for about a year. Another time I was called to see an animal. Its abdomen was distended and it was fighting for air. I called the attention of my assistant student and said, "I want to show you something." The heart was very irregular. I gave $\frac{1}{4}$ grain injection of barium and in five minutes had action. This student I took in as a partner, and I cannot keep him from using it, although he has been cautioned again and again about the condition of the animal before using it.

Dr. Bolser—Dr. Roberts, what size dose did you use on the animal that rested?

Dr. Roberts—Not an overdose. I usually give 40 grains orally.

Dr. Bolser—I think the great trouble is that we want to get too quick an action and we give too large a dose. I carry $2\frac{1}{2}$ grains with me all the time, and it is a most satisfactory drug for me that I have in my case. I give it intravenously.

Dr. W. B. Craig—I used it in 40 grain doses for about a year, and was getting good results, until one night I had a case of impaction of the stomach, and gave 40 grains. The man called me about 1 o'clock and said the mare was paralyzed in the hind parts and died in about an hour. Now I had used it a number of times before without bad results.

President Boor—The next is a paper, "Pharmaceutical Preparations," by A. D. Thorburn.

This paper was illustrated with the actual routine of picking the crude drug in a far-off country and bringing it step by step to the point where it was ready for the practitioner to use. It

was highly interesting from an educational standpoint as to the numerous things aside from labor that enter into the production of the finished article ready for use.

Election of officers followed, with the following results:

President—Dr. R. A. Craig.

Vice-president—Dr. T. A. Sigler.

Secretary—Dr. E. M. Bronson.

Treasurer—Dr. J. W. Klotz.

Drs. A. F. Nelson, J. B. Archer and J. L. Axby were then chosen as a Board of Censors.

President Boor—We will return to the programme and have "Specimens," by Dr. W. A. Dryden, of Columbus. The specimens were Hair Ball, Dentigerous Cyst and Cystic Calculi, all having been removed from animals in the doctor's practice, and an interesting talk it was.

Dr. Klotz—This specimen of teeth; how many do you suppose there are in this? I have seen a few of these in colts that were only two months old that contained three teeth, and they grow the same as any other teeth, and I believe if you break this one up you will find three-quarters in it. I saw Dr. Williams remove one of these cysts at New Haven that contained two teeth of fair size, but the entire mass was not so large as this one.

Dr. Boor—I will state that two years ago I was called to see a colt that had one of these cysts near the ear. It was noticed first when this colt was running with its mother. I found two teeth that were quite similar.

Member—I would like to ask if these teeth are fast in the skull? I have a horse that has had a discharge from the base of the ear and has been that way for about two years; I opened it but failed to find anything; still open.

Dr. Boor—In the case of mine I opened and removed teeth and all, and I don't remember, but I don't think there was any connection of a bony nature.

Member—I have removed five of such formations and I found a cup-shaped cavity in two of them. Discharge stopped upon removal.

Dr. Klotz—I would like to ask if any of you have ever had any experience in finding these teeth in other regions, ovaries or testicles. I have found one case in which bones were present in the testicles. It did not exactly resemble a tooth as much as it did the ribs of a chicken; there were several small pieces present.

Dr. R. A. Craig—A few years ago we had in our possession a hair ball made up of hog's bristles. The history of this case was something like this: A man butchered and threw the hog bristles where some of the cows ate the bristles. The ball was nearly ten inches in diameter. She died from ruminitis in about two weeks.

President Boor—If there is no one else, I will entertain you for a few minutes. I don't lay any claim in this paper to have discovered anything. I have simply recorded what I have heard others say they used along these lines, and I wish to give you the results of my experiments. My subject is "Roup." (Discussion.)

Dr. R. A. Craig—I want to ask as to the manner of disinfecting the yards?

Dr. Boor—The gentleman who owned the fowls built some very nice houses; they are all built up off the ground and are well ventilated. As to the method of disinfection, we burned sulphur, after they were first sprayed with a carbolic solution. The houses were tight, being covered with tarred paper on the outside, and of course any sulphur that was burned in there, the fumes remained until the house was opened. He washed the drinking vessels with a solution of bichloride twice daily. The chickens that were being treated were put in separate pens from the other fowls, and the men who were working about the place were ordered to wash off their boots before going into the other yards. The yards were sprinkled with coal tar preparation; no cases since December 2. I wish to say that the 3,000 unit dose is about one-third stronger than the 2,000 unit. We laid the chicken on its side and had an attendant lift up the wing, then we picked up the skin and where there is no feathers and injected there.

Member—Did you use more than one injection?

Dr. Boor—Only in three-quarter cases where they were very bad and we went to inject some others, saw some that were not entirely well; we gave a small dose.

Dr. Axby—Did you treat other than the affected birds?

Dr. Boor—No.

Member—Did the cockerels come from the same place the hens did?

Dr. Boor—I understand that they did, but they were not affected, nor have they been. All seemed to me to be pullets that were affected.

Dr. R. A. Craig—Could you explain that to a certain degree by saying that the younger birds are predisposed to affection on account of their age; if the cockerels were older birds?

Dr. Boor—I don't know that they were older; they looked like cockerels to me.

Adjourned to meet at the Indiana Veterinary College at 8 o'clock.

Wednesday Evening, January 12, 1910.

President Boor—Please come to order. We have some communications to read, the report of the State Board of Veterinary Examiners, and a resolution under new business.

Secretary reads communication from Secretary Lyman of the A. V. M. A. as to sending one or more delegates to the California meeting.

Communication referred to a committee composed of the several incoming chairmen of committees. Carried.

Report of the State Board showed 43 graduates given certificates and 16 were up for examination and two passed; also that there was a total of \$11.41 in treasurer's hands. Accepted.

NEW BUSINESS.

Resolution—In accordance with article seven (7) of the by-laws, we move to amend section six (6) of said by-laws to read as follows: Beginning after the word honor, "except the office of secretary, which office shall have an emolument of fifty dollars (\$50.00) per annum, as salary for services which devolve upon the incumbent of said office. Said emolument to date from January, 1909."

(Signed) J. W. Klotz, Wm. F. Myers, C. I. Flerning, Ferd. A. Mueller and F. F. Jacobs.

Motion to suspend the by-laws and pass the resolution was unanimously carried. Motion to pass the amendment was passed the same.

President Boor—We will now listen to Dr. L. E. Northrup on "Western Quarantine and Lip and Leg Disease," illustrated with lantern slides. (Discussion.)

Dr. R. A. Craig—I would like to ask if you have ever used chloride of lime for your antiseptic?

Dr. Northrop—No.

Dr. Craig—The reason I asked the question is that last year we bought some imported sheep from England, and as you know "Foot Rot" is common in England, and we used tar disinfect-

tants with no results, having an Englishman who cared for them also. We then made a trough and put in the water 46 ounces of lime to the gallon of water, and walked these sheep through the trough once a day; this did the work.

Dr. Northrop—That would be all right I have no doubt, for we use lime and sulphur and more lime for the foot and leg ulceration. Put the sheep under better conditions and they probably would get better anyway, as under good conditions "Foot Rot" does not spread rapidly.

Dr. Nelson—Don't they have a great deal of trouble with the disease on the ranches out there?

Dr. Northrop—Yes, they do; it came up from old Mexico to this country. It is said we get it in this country in the winter when the sheep find it hard to get feed, and scratch themselves or tear their skin. One authority says we never get it below 2,000 feet altitude; another that we get it in the low country. Dr. Wilkins says in England the water holes get so affected with the germ that the sheep get it in their feet in that way. There has been a persistent effort in this country to call it foot and mouth disease, when it is entirely different; the ulcers are altogether different.

Dr. Craig—You spoke of using sulphur; how do you use it?

Dr. Northrop—We boiled the lime and sulphur together for two hours; then let it settle, draw it off and use it. It has proven so satisfactory that the government recommends it as best and cheapest.

Dr. Nelson—You spoke of the chloride of lime; do you use it?

Dr. Northrop—Yes, we use it in Foot Rot.

Dr. Nelson—Would that not be a very uncertain preparation?

Dr. Northrop—We use it in disinfecting our pens. In our work we use the pens over and over again for different experiments. For instance, we will have a bunch of hog cholera in a pen and when done with those, we soak the pens thoroughly with a cheap disinfectant, remove the manure, then use a solution of chloride of lime, and we don't have any trouble from infection.

President Boor—Gentlemen, you have had a very pleasant evening with this paper with its illustrations; it is something new to most, if not all, of us, and I for one feel like thanking the doctor for this entertainment, and I believe the association as a whole should do the same. Moved and seconded and carried.

President Boor—Now we are all but through for this evening; has anyone anything for the good of the order, so to speak?

Dr. Roberts—At Chicago during the national convention last September, I remember that those of us Indianaians who were present thought it wise to ask the A. V. M. A. to meet at Indianapolis in 1910. After meditating some little while, wondering whether it was the proper thing to do, we sent them (the executive committee) an invitation to come to our city for their next annual meeting. We were turned down because the executive committee thought the western coast had been slighted with reference to meetings, and decided upon San Francisco for the next meeting. I would like to know what the members of the State Association think with reference to inviting the greatest of veterinary organizations to Indianapolis for their 1911 meeting? Do you think we can entertain them? Do you think with the assistance of the State Association that we could furnish clinics enough for that day? Do you think the association can finance the arrangements and also furnish entertainment for the ladies that will be present at the meeting? Have we nerve enough as well as money enough to take care of them if they come?

Enthusiastic responses were made, and it was finally put on motion and carried that the A. V. M. A. be invited here in 1911, and it be left to a committee to be appointed by the incoming president. Adjourned until 9 a. m. January 13.

Ind. Vet. College, January 13, 1910, 9 a. m.

CLINICS.

Clinic No. 1.—Black mare, aged, 15.3 hands, 1,050 pounds; owner had her in his possession 30 days; lame when he got her; goes about four or five blocks very good, then lameness appears in the left hind; gets worse and at the end of fifteen minutes she will go down. Drs. Fleming, Greiner and McMahon were asked to diagnose the case. Animal was led ten minutes; very lame in the left hind; violent heart action; pulse hardly perceptible; respiration violent with dyspnoea; pupils dilated, showing distress throughout. Diagnosis: Thrombosis of the left illiac artery.

Clinic No. 2.—Grey mare, aged, 16 hands, weight, 1,200 pounds; operated upon fourteen days previous; resection of the planter cushion and perforans tendon; wound showing healthy granulations; animal improving. Dr. Roberts.

Clinic No. 3.—Black mare, aged, 15.3 hands, weight, 1,100 pounds; ring bone; high neurectomy. Table, local anæsthetic, Eurea Hydrochlorate and Quinine 1 per cent. solution. Dr. W. B. Craig.

Clinic No. 4.—Black mare, aged, 15 hands, weight, 800 pounds; injured seven weeks previous, having the fourth sacral vertebra fractured. Micturition and defecation were suspended, the former re-establishing itself in six days, and the latter in ten days. The tail which had hung pendant was slightly raised today for the first time. The gait, which had been very "wabbly," was much improved. Dr. Bronson.

Clinic No. 5.—Boston bull bitch; growth in the vagina. Drs. Schwin and Armour were asked to diagnose. Diagnosis: Infectious Granulomata. The gentlemen later operated upon the animal, removing the growth. Anæsthetics used were H. M. C. and Codrenin locally.

Clinic No. 6.—Oophorectomy No. 20; bull bitch. Anæsthetic, H. M. C. Dr. Kelly.

Clinic No. 7.—Bay mare, black points, 7 years old and speedy. Drs. G. L. Clark, Buzzard and Jacobs were asked to locate the lameness. Diagnosis: bad conformation of the fetlock, curby hock, and small exostosis of the hock; the latter the cause of the lameness. Cunean tenotomy by Dr. Klotz and fired by Dr. Coover.

Clinic No. 8.—Black mare, aged, 16 hands, weight, 1,100 pounds; thin and viscous; calk wound with accompanying corinitis. Treatment: antiseptic wash, creosol 50 per cent. solution and dry dressing. Dr. Roberts.

Clinic No. 9.—Bay gelding, aged, rough, weight, 1,400 pounds; keratoma from calk wound. Resection of the coronary and removal by Dr. Sigler. Table, local anæsthetic, cocaine.

Clinic No. 10.—Grey gelding, 15.1 hands, weight, 800 pounds; driver. Fibroid tumor, result of a bruise of the coronary band; removal on the table by Dr. Fleming.

Clinic No. 11.—Mule, 17 hands, weight, 1,400 pounds; 7 years; seedy toe right front, to within one inch of the coronary band. Removal of the diseased portion by Dr. Fleming and Farrier Cole.

INTERNATIONAL COMMISSION ON CONTROL OF TUBERCULOSIS AMONG DOMESTIC ANIMALS.

It seems desirable that the public should be given opportunity to know what this commission is doing inasmuch as the commission represents indirectly the Canadian and United States

governments, and involves live-stock sanitary control work of all of the individual states.

The last session, held at Detroit, was devoted largely to reports. There were present representatives of Canadian and American breeders, Canadian and United States Departments of Agriculture, American and Canadian veterinarians. The following reported: Committee on Education and Legislation, Committee on Location of Tuberculosis in Cattle, Committee on Dissemination of Tuberculosis, and the Committee on Disposition of Tuberculous Cattle. The Committee on Education and Legislation made a partial report presenting a critical study of experience of certain states in their efforts to deal with this problem. The purpose of this was to present full information for the commission concerning mistakes and failures, and comparative successes of communities that have undertaken serious work with tuberculosis.

The Committee on Location of Tuberculosis in Cattle presented their report under such headings as "Provision for Notification"; "Location by Tuberculin Test"; "Location of Infected Herds Through Meat Inspection Service"; "Most Important Sources of Animal Tuberculosis."

The Committee on Dissemination of Bovine Tuberculosis presented its study under such headings as "Introduction of Disease Into the Herd"; "Dissemination by Feeding to Calves"; "Dissemination by Contact at Shows"; "Dissemination by Placing Healthy Animals in Contaminated Stables"; "Dissemination by Transportation of Healthy Animals in Infected Cars"; "Dissemination by Pasture Exposure." The discussion on this report gave considerable attention to the problem of tracing back from the killing floor to the infected farm with a view to detecting the diseased herds and concentrating control work as much as possible on diseased herds.

The Committee on Disposition of Tubercular Cattle reported concerning the necessity of accepting tuberculin for diagnosis as a fundamental; the necessity of voluntary co-operation; and the superiority of voluntary co-operation to measures of compulsion. This committee considered the feasibility of the Bang and Oster-tag methods of dealing with tubercular herds under American conditions. It also made recommendations concerning the relation of indemnity to final disposition of carcass; the principle of carcass salvage; the obligatory disposal of all clinical cases;

and a study of the conditions which should determine the disposition of reacting cattle.

A very considerable amount of discussion on this report was given to the question of remuneration for owners and particularly as to whether this should be regarded as a temporary or as a permanent provision in tuberculosis control work. A number of members held that it must necessarily be considered as a useful preliminary and temporary measure.

Careful consideration was given to the possibility of making either the Ostertag or Bang method of dealing with tuberculosis in the herd, or a combination of the two, feasible in America and Canada for grade herds. This is along the line of finding some method more economical than slaughter for as many herds as possible.

The next meeting of this international commission will be held in Ottawa.

M. H. REYNOLDS, Secretary.

PORTLAND VETERINARY MEDICAL ASSOCIATION.

Minutes of a meeting held in the Medical Building for the purpose of organization of the veterinarians of the City of Portland on Tuesday evening, March 29, at 8 P. M.

The name selected was the Portland Veterinary Medical Association.

Election of Temporary Officers—Dr. J. T. Sullivan, president *pro tem.*; Dr. L. G. Stickney, secretary.

Remarks by President Sullivan, followed by submission of by-laws of American Veterinary Medical Association, and the following changes were suggested by members:

1. Change of article 6, section 2, in regard to two-year colleges. It was moved by Dr. Johnson, seconded by Dr. Smith, that we be governed by the recognized colleges of 1910.

2. Moved by Dr. Miller and seconded by Dr. Abbot that membership fees be five dollars and dues one dollar per month, with special assessment as seen fit by members.

3. A change in article 8, section 2, to change dues to monthly instead of semi-annually, as suggested in the American rules.

Meetings—To be held the fourth Tuesday in each month at

8 P. M. Regular annual meeting the third Tuesday in September, 1910.

Adoption of By-Laws—Moved by Dr. Carney and seconded by Dr. Miller that we adopt the by-laws with the above changes. Carried by unanimous vote.

Election of Regular Officers—President: Nomination of Dr. Carney by Dr. Stickney, seconded by Dr. Sullivan, on being placed to vote, was elected unanimously.

Vice-President—Dr. Sullivan was elected by a unanimous vote.

Secretary—Dr. Sullivan nominated Dr. Hanson, who was elected.

Treasurer—Dr. E. W. Hagyard.

Executive Committee—Dr. Smith, Dr. Johnson, Dr. Miller. First member, Dr. Smith, to act as chairman of the committee.

Essayists of Next Meeting—Dr. Smith, Dr. Sullivan.

Adjournment 10 P. M.

NEW YORK STATE VETERINARY MEDICAL SOCIETY.

Program for meeting of New York State Veterinary Medical Society, to be held at Ithaca, August 25, 26, 27, 1910 (tentative plan, May 12, 1910):

V. A. Moore, Ithaca—"Meat Inspection."

Hon. R. A. Pearson, Albany—"Milk Inspection."

Wm. J. McKinney, Brooklyn.

T. G. Sherwood, New York.

D. W. Cochran, New York.

J. Lynn Leonard, Spencer—"Therapeutics of the H-M-C Compound and the Value to the Veterinarian."

Wm. B. Switzer, Oswego—"A Mistaken Diagnosis."

D. D. LeFevre, Newark—"Experience with Barium Chloride."

Ben Howes, Corning—"Prophylaxis."

J. F. DeVine, Goshen—"Statistics of Tuberculin Tests and Post-Mortem Findings."

TABLE INDICATING THE REQUIREMENTS OF STATE LAWS GOVERNING THE PRACTICE OF VETERINARY MEDICINE THROUGHOUT THE UNITED STATES, WITH NAMES AND ADDRESSES OF EXECUTIVE OFFICERS.

Secretaries are requested to promptly notify the REVIEW office of any changes in the law, regulations, personnel or addresses of the officers of their respective Boards.

[illegible]

STATE.	Preliminary Education.	Professional Training.	Licensing Tests.	Registry.	Executive Officer and Address.	Administrative Board.	Remarks.
Missouri.	No requirements.	No requirements.	Examination.	With the State Board.	D. F. Luckey, Sec., Columbia.	Veterinary Examining Board.	
Montana.	.....	.....	.....	.....	.....	.....
Nebraska.	No requirements.	No requirements.	Examination.	With State Board.	A. T. Peters, Lincoln.	State Board of Vet. Examiners.	
Nevada.	.....	.....	.....	.....	.....	.....
New Hampshire.	No requirements.	No requirements.	Exam. or grad. from a lawfully constituted school.	With the State Board.	R. I. Twombly, Secretary, Alton.	State Board of Veterinary Examiners.	
New Jersey.	21 years of age. Good moral character. Competent school education.	Grad. from legally incorp. school having at least three year course approved by Board.	Examination and practical tests.	With the State Board and with the Clerk of the Court of Common Pleas.	Wm. Herbert Lowe, President, Paterson.	State Board of Veterinary Medical Examiners.	Examinations held at State House, Trenton, Jan. and June.
New Mexico.	.....	.....	.....	.....	.....	.....
New York.	Graduation from a four year secondary school course subsequent to 8 years elementary preparation.	Graduation from a registered school.	Examination.	With the Clerk of the county of practice.	Chas. F. Wheelock, Chief of Examinations Division N. Y. State Education Department, Albany.	Examinations Division of New York State Education Department.	
North Carolina.	No requirements.	No requirements.	Examination.	With Sec. State B'd and Sup. Ct. of city of residence.	G. A. Roberts, Secretary, West Raleigh.	Board of Veterinary Medical Examiners.	
North Dakota.	No requirements.	Graduation from a legally authorized school.	Examination.	With Board annually.	S. P. Smith, Pres., Cando.	State Board of Veterinary Medical Examiners.	
Ohio.	No requirements.	No requirements.	Examination. Diploma from reputable school accepted in lieu of examination.	With the Secretary of the State Board.	David S. White, Secretary, Columbus.	Board of Veterinary Examiners.	

423



A GROUP OF U. S. V. M. A. MEMBERS, PHILADELPHIA, 1894.

Seated on ground, left to right—H. J. S. Weicksel, E. B. Ackerman, C. H. Doepel, John T. Ferley, H. D. Gill, Tait Butler.
 Seated on chairs, left to right—S. J. J. Harger, W. B. E. Miller, A. W. Clement, D. E. Salmon, Jas. L. Robertson, W. Horace Hoskins,
 T. J. Turner, W. L. Williams, A. F. Loutard, Olof Schwarzkopf, Leonard Pearson, Thos. B. Rayner.
 First row standing, back of chairs, left to right—Geo. Smith, E. R. Ogden, Jas. T. McAnulty, J. C. Bartholomew, Guildin R. Hartman,
 F. H. Mackie, H. D. Hanson, W. H. Marienet, Jas. B. Rayner, J. O. George, H. P. Eves, H. J. McClellan, I. S. Allen,
 M. H. Reynolds, John Faust, R. Hart.
 Second row standing, left to right—R. W. Hickman (with umbrella), Chas. Lintz, _____, Howard B. Felton, T. Bent
 Cotton, Cooper Curdice (behind John Faust).
 Last row standing (on elevation), left to right—D. J. Dixon, M. E. Conard, Jno. W. Adams, C. A. Cary, T. Earle Budd, C. E. Howse,
 S. Brenton, C. T. _____, entner.

AMERICAN VETERINARY REVIEW.

JULY, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, May 15, 1910.

INSOLUBLE SALTS OF RADIUM IN THERAPEUTY.—At the present time when the application of radium and its compounds seem to enter in the treatment of some specific diseases, the following remarks extracted from a communication of Dr. H. Domini on the question will prove of interest for comparative pathologists, namely veterinarians.

The experimenter who is studying the effects of radium upon living tissues has two fundamental methods at his disposal: the one in which the organs are exposed to the radiation from apparatuses that contain the salt of radium, and the other in which the said salt is injected directly into them.

The first of these methods uses radium salts fixed upon linen or metallic supports or enclosed into tubulated recipients. The salt and its emanations are isolated from the organic elements, which are then influenced only by the radiation sent from those radiiferous apparatuses.

In the second method, the radium salt is injected into the interstices of tissues. The radiation due to the salt is diffused in the organic tissue, is dissolved into it, metamorphosed in it, and it conveys to the living elements an induced radio-activity or the power of sending off the various strength of rays. Of these two

methods, the second has been used a great deal less than the first, on account of reasons of physiological and economical order. Indeed, the first experimentors who employed injections of radium, used soluble salts, whose local and general action is at the same time temporary and from the start decreasing, as the soluble product is rapidly carried away beyond the zone where it is injected and then eliminated from the organism by its depurative organs.

It has then been thought to obtain a local or general radio-activity, relatively permanent and lasting for certain organs, for the blood and finally for the entire organism by substituting the use of insoluble radium salts in the place of soluble ones. It was certainly not illogical to suppose that particles of insoluble salts would remain, notwithstanding their extreme small size in the organs where they would be introduced and would find in the circulatory apparatus an enclosed system, difficult to go beyond on account of their inaptitude to dialysis. Besides, would not the permanent presence of the radium salts have for result the persistency of the induced radio-activity corresponding to the incessant production of the emanation coming from each particle of radium salt, the center of origin. Those suppositions have been confirmed by the experiments made by Dr. Dominici.

He first injected in the organism of man and of various animals, microscopical powdered sulphate of radium in suspension in a saline solution isotonic to the blood of man and of mammalia. This mixture was injected: 1. In the conjunctivo-vascular tissue of the ear and the groin of a rabbit and in the conjunctivo-vascular or muscular tissue of human limbs that were to be amputated for a surgical purpose. 2. In the tracheo-bronchial apparatus of various animals. 3. In the parenchyma of the spleen of rabbits. 4. In the marginal vein of the ear of adult rabbits. In a first series of experiments the persistency of the sulphate of radium in the living tissues has been observed in a lapse of time varying between 7 and 67 days after the injection. And it has been established that the principal zones of arrest were: 1. After the injection in the subcutaneous and striated muscular tissue of man or

animals, the *lymphatic interstices of those tissues*; 2. After the injection in the tracheo-bronchial apparatus, the *lymphatic interstices of the lungs and pleura*; 3. After injection in the spleen, the *splenic parenchyma*; 4. After injection in the venous system, the *bloody capillary meshes of the lungs and consecutively that of the kidneys, liver, spleen, nervous system and other organs*.

The persistency of the sulphate of radium in the spleen demonstrates that the arrest of this substance in the living tissues is not but the result of a single process of embolie, considering the disproportion existing between the large dimensions of the veins and the minute size of the radium salt. It is more likely that the radium becomes incarcerated partly in the macrophages of Metchnikoff and partly in the fixed elements of the connective tissues.

The first results were confirmed and exceeded by others, as the presence of the radium sulphate was detected one year and a half after the injection in the organs of a rabbit which had received 5/100th of milligramme in the marginal vein of the ear. In another instance, however, where 3/100th of milligramme was injected to another rabbit, thirteen months later was free of radium or had so little of it that it could not be detected with the usual methods.

If the above experiments show beyond doubt that arrest and long staying of sulphate of radium can take place in such organic territories as the *conjunctivo-vascular tissue, the striated muscular tissue, lung, liver, spleen, etc.*, it remained to be proven that *a certain quantity of this salt can also be mobilized in the general vascular apparatus and circulate in it as in a closed system*.

With the assistance of Prof. G. Petit, of Alfort, the following experiment was made: In the right jugular vein of an aged horse in good condition, one milligramme (10,000 microgrammes) of insoluble radium salt diluted in 250 c. c. of physiological serum, were injected. The operation was followed by a rather relatively abundant discharge of the salt, but this was temporary and it soon diminished, and after six months an examination of the blood revealed that a certain quantity of the sulphate of radium was

still remaining and circulating in the circulatory system of the horse. These experiments have then proved the possibility to obtain by the injection of an insoluble salt of radium, the permanent radio-activity of certain organs of the blood also, and therefore of the entire organism.

Indeed, the radium sulphate which is fixed in the tissues, the one which is mobilized in the vascular apparatus, represent as many centers, producers of emanations, which dissolved in the organic elements, confer on them an induced radio-activity. This radio-activity, local and general, is not accompanied with any disturbance in the health of the individuals that were injected; but, however, is not without effect on the physiology of the living tissues. Therefore it is then just to suppose that the radio-activity, produced by the doses of radium sulphate used, modifies the nutrition and the reactions of the living elements. And the researches made permit to believe that these injections suractivate hematopoiesis without producing plethora, excite the digestive functions without producing morbid hypersecretion and stimulate the nervous system without giving rise to spasmodic phenomena.

Recently introduced, this new method of using radium has already given valuable results in the human surgery of malignant tumors, epitheliomas, sarcomas, cheloid growths, etc.; it, is, however, very doubtful if it will ever find its application in veterinary surgery.

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FEVER OF MALTA—MEDITERRANEAN FEVER.—I may be allowed to trespass a little over my ordinary work and take advantage of an article from the *Presse Medicale* on this disease, to present the readers of the REVIEW some few statements of interest relating to its history and its mode of transmission, as points of comparative pathology which veterinarians may not be ignorant of.

Previous to 1863 English physicians had observed in the Island of Malta the existence of a fever with special characters

which Marston described under the name of *Mediterranean Remittent* or *Gastric Remittent Fever*. But what was its nature was not brought out until in 1887, when Bruce isolated from the splenic pulp of a cadaver a special microbe which he named *Micrococcus Melitensis*, with cultures of which he made subcutaneously inoculations on monkeys and reproduced a disease similar to that which was observed among men. In 1891 he obtained cultures of the same microbe with material obtained by puncture of the spleen during life. Six years later, Wright, by showing that the serum of sick individuals agglutinates the *Micrococcus Melitensis* created the sero-diagnosis of the disease and gave a true manner to recognize it with certainty, a manner which is to-day extensively put into practice.

In 1889 Birt and Lamb reported two cases of inoculation to men: one accidental and the other voluntary, of the *Micrococcus Melitensis* which were followed by typical cases of *Malta* fever. During these years it was found that if the disease was endemic in Malta, it existed in other countries. In 1871-72 it had been found in Sicilia and the southern part of Italy, where it received the name of Napolitan fever. Then at Gibraltar, where it was described as Rock fever. It is observed in Spain, at Cadiz, Malaga, Barcelona, in the north of Italy, in Sardinia, in Greece, in Turkey, at Smyrna, Jerusalem, at Port Said, Alexandria, in fact it exists in all the countries that form the basin of the Mediterranean Sea, hence its name.

But its geographical extent is still larger. It has been observed in the ports of the Red Sea, at Aden; it is very frequent in India, in Birmania. It is found in China, in the Philippines, the Fiji Islands, in various points of Africa, in South America, the West Indies, Cuba, the Mississippi Valley, in Tunisia, in Algeria, etc. If Malta has been the center, the Mediterranean shores was the nest of the infected regions from which it started. Numerous have been the observations recorded, and it seems to be the conclusions of scientists that Maltese fever is one of the most infectious diseases that threaten the population of those countries.

There have been two cases recorded from England, but they were in two soldiers returning from Malta.

Being a microbial disease, the question of its mode of transmission is of great importance.

First, the presence of the *M. melitensis* was looked for in the various excreta. It was as a rule, found in urine, and this fluid can be infected even in people who do not appear to be sick and who attend to their own business. To the point of view of the dissemination of the microbe, the special danger of these ambulatory forms is very great. In fecal matters, the researches have been generally negative. Likewise in saliva, sputa, perspiration, and yet inoculation with this last to monkeys have made their serum agglutinating. The micrococcus has been found in the milk of women, and the vaginal mucus in one case even after eighteen months of the infection.

The microbe exposed to the sun is killed rapidly. But it resists cold and dessication. It has been found living in the urine for seven weeks, on clothes soiled with dried urine for 78 days, in water for from 6 to 72 days and in earth from 7 to 91 days. Man is much more susceptible to the action of *M. melitensis* than animals and from the saying of bacteriologists, *after the bacilli of glanders and that of pest, it is one of the most dangerous pathogenous agent to handle.*

Very susceptible to it, but less than man, monkeys require large doses to be infected. The infection can take place by the digestive, ocular, nasal, cutaneous and subcutaneous ways. The disease that follows is similar to that of man. Rabbits and guinea pigs are more resisting. It is only by intra-venous, intra-peritoneal or even intra-cerebral inoculations that they can be killed. Horses, donkeys, dogs, seem in general rather exempt from infection, or at any rate they only exhibit very mild fever without any other symptom.

The contagiousity cannot be a question of doubt as proved by the epidemic that occurred on a boat the "Joshua Nicholson." There were on board 65 Maltese she goats. Five of them died during the journey. 32 among the others were found infected

with fever when they arrived in America. The crew was composed of 23 men who drank freely of the milk of goats. Eleven of them took the disease as was confirmed by the sero-diagnosis. The caprine origin is surabundantly demonstrated. Is she the constant agent of transmission and is the milk exclusively the carrier of the microbe? Probably no. At any rate, the microbe is expelled by the urine and this can also be an agent of transmission. The contagion taking place from one goat to another by ingestion, inhalation or cutaneous introduction. Attempts to transmit the disease with mosquitoes have remained negative.

In conclusion to this long résumé concerning Malta fever, let us glance at the recommendations as sanitary measures made as being applicable in countries where the disease may be as endemy or epidemy:

1. Obligatory declaration.
2. Guard the people by printed post bills of the danger of partaking of unboiled milk and of fresh cheese.
3. Watch the importation of goats from Malta so as to prevent the introduction of infected animals.
4. Organize the inspection of stables, of herds of animals and prevent the sale of the milk from animals recognized as diseased.

The Commission of Malta went as far as recommending the slaughter of all infected animals.

(As I am about sending this, I received the Report of the Bureau for 1908. To those who may desire more information on Maltese fever, I will refer them to that report.)

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CONCISE NOTES ON THE SURGERY OF THE TEATS IN COWS.—Traumatic accidents, atresia or obstruction of the galactophorous canals are cases that are of daily occurrence in country districts, and the proper surgical treatments that they require are too often neglected by veterinarians, either by carelessness or other reasons. The literature on this subject being so poor gen-

erally, and at least so incomplete in classical works. To remedy the evil and do practical good work, Mr. Hamoir, a Belgian veterinarian has written for the *Annales de Bruxelles*, a short series of articles where in two chapters he has treated the wounds of the teats and the obstructions of the lactiferous canals with their surgical indications.

Wounds of the teats, due to bites from dogs or tearings by barb-wire fences are of two kinds and vary in size, direction, depth and also in their severity, and under those conditions can be divided into superficial and deep. The first being a simple wound, scratching perhaps, more or less regular, but with a canal still perfect and uninjured, are generally of little importance, seldom requiring interference and for which the principal indication is to have the milking done in such a manner as to avoid pain as much as possible. Avoid the use of the catheter or milk tube, which is liable to complicate the injury with serious infection unnecessarily. Cocaine and anodyne applications will do good.

In the deep wounds, when the canal is lacerated, milk fistulas may be met with, and while they may sometimes close spontaneously (a rather rare occurrence, by the way), they need the surgeon's attention. If the wound is recent and clean, a twisted or an interrupted suture may be sufficient. The success in the cicatrization depending on the length of time elapsed since the injury has been received. Milking is then, of course, difficult, and the thorough sterilized milk siphon must be resorted to.

If the wound is old and fistulous, sutures of any kinds will seldom be of any advantage, especially if the animal is in full milking condition. If the animal is dry, the closing of the fistula can be obtained easily by the operation recommended by Mr. Hamoir, which he calls *Autoplasty by Sliding*. He proceeds as follows: The opening of the fistula is isolated by making four incisions through the skin, two parallel and lateral vertically, one centimeter apart and leaving the fistulous opening between them. Then, above and below the opening, two other incisions are made horizontally across, also parallel and uniting the two

first ones. In this manner, the fistulous opening is left in the centre of a small square piece of skin. This is dissected loose carefully and removed and then the canal of the fistula is made fresh by scraping with a bistoury. The flaps of skin which remain above and below the space where the fistulous opening was are then in their turn, dissected loose and by carefully pulling the upper one downward and the lower one upward they are brought in contact and secured with close stitches made with hairs or catgut. Layers of iodoformed collodion are put over the wound to reinforce it. Perfect union is the result.

Obstructions of the canals may occur at the entrance of the teat or in the course of the canal. In the first instance, we have the congenital imperforation, the presence of papillomatous growths or again calculus. For the congenital imperforation, puncture with the curette probe of Strebel is the indication.

For the atresia of the meatus due to growths, catheterism may do some good, but again the curette instrument of Strebel is the best, as with it the vegetations can be removed by pieces. Calculi may be found, single or in number. The author has extracted some with forceps. When the obstruction of the teat exists in the course of the canal, such as for instance a large nodosity located in one point of the canal, whatever may be its nature, the indications are to excise it with one of the various bistouries of Kuhn, Morier, Hug or Strebel. But if the nodosity or the induration is involving a large surface of the canal, while similar indications for using the various bistourie-cachés already mentioned—exist. There may be advantage if inflammatory symptoms are not present, to leave the obstruction alone rather than to run the chances of severe complications.

There is also another abnormal condition of the teat which may require surgical interference and that is when there exists a membrane closing the communication between the galactophorous sinus and the canal. This membrane has to be perforated with force by the introduction of an aseptized milk probe or, better yet, with the blade of a bistourie-caché which is moved in such a way as to make free incisions of the occluding membrane.

Those remarks and suggestions of Mr. Hamoir are very judicious and practicable and certainly his method of treatment for old milk fistulas deserves attention.

* * *

LINGUATULOSIS.—This is one of the many new names that are found in the recent nomenclature of our day, and after searching for it in several medical and veterinary dictionaries, I failed to find it. At any rate as it indicates by its name, it refers to the pathological troubles that arise from the presence in the organism of the parasites of the order "Lingualata," class "Arachnoids" and gender "Pentastoma" of medical zoology. The "Pentastoma tenoides," which is the adult individual of the "Pentastoma Denticulatum" is found in parenchymatous organs, such as the liver and lungs, or again in the mesentery and lymphatic glands and blood vessels of sheep, goats, cattle, cats and other animals. Their principal location, however, is the anterior passages of the respiratory apparatus, the nasal cavities, where most frequently in dogs they give rise to that peculiar series of manifestations so well described by Cadeac in his encyclopedia under the name of Parasitic Coriza in dogs. The adult linguatula live in the nasal cavities of dogs, but their larval stage occurs in herbivorous animals. Ordinarily and perhaps in the majority of cases where the number of parasites is small, its evolution takes place without accidents, and yet the parasites are found specially in the lymphatic glands of the mesentery. But when the parasites are very numerous, in a massive infection so to speak, then very important lesions are found. And still, strange as it may appear, it will be principally and almost only in the works of zoology that description of the lesions that those massive infections may leave after death are referred to. It is, therefore, often as a surprise of autopsy that they are discovered. Prof. Moussu, who has had the opportunity of making post mortems of many cadavers has observed those lesions, and in a recent clinical lecture has called the attention of his students

to the peculiarities they presented in one animal. "Once you have seen them," he said, "you will never forget their aspect. They are essential to that disease. Therefore remember them well.

"Indeed, the liver has on both of its faces many small perforations, as if they were made with a punch, without local hemorrhage and about one millimeter in diameter. Overlooked by a superficial examination, they open into small canals of same size losing themselves in the depth of the organ. The diaphragm looks as if it had received numerous pricks of pins or needles, which have left small round little holes of the same dimensions as those of the liver. The lungs which are free from pneumonic or any other lesions, show also on their surfaces numerous small subpleural hemorrhagic spots, which by attentive examination show in the center a circular perforation of the pleura, entrance to a small canal running in the thickness of the lungs. If these subpleural spots are incised and teased out with care, a vermiform parasite, alive, white, with a wide head and thin caudal extremity is found, it is a larvæ of *Linguatula*. All the subpleural hemorrhages correspond to the entrance of one of these larvæ. In the hypertrophied mesenteric glands, some of which are hemorrhagic, the parasite can also be discovered. The infection in this subject was general."

The interest presented by the clinical description was increased from the fact that it was detected in an animal which had died with all the most manifest evidences of a very severe attack of Strongylosis, having been estimated at from 1,500 to 2,000 for one gramme of fecal matter examined. The animal had died absolutely in a cachectic condition. The examination of its intestines had shown, however, that it was free in great part of the worms and evidently the cause of death was the so extensively existing *Linguatulosi*s.

It is certain that this disease is a serious affection. If the infection is small, it may pass off overlooked, but if it is sufficient to promote displacements through tissues and viscera of the organism and death may follow, it seems that its pathogeny

might find a very good place in veterinary works as well as in those written by zoologists.

It may be an exceptional disease, but veterinarians ought to know its manifestations.

* * *

BIBLIOGRAPHY.—In this I take pleasure in bringing out again a name familiar to all veterinarians. It is to consider the continuation of a work that has been undertaken, and of which so many parts are known to many of our confrères. Prof. C. Cadeac, of the veterinary school of Lyons, has among the various divisions of his encyclopedia published General Surgical Pathology of the domestic animals in its broad sense, then that of the foot, that of the skin and blood and lymphatic vessels, that of the tendons, muscles and nerves and that of the articulations. Now the house of J. B. Bailliere et fils is presenting an addition to this already long list, the "Surgical Pathology of the Digestive Apparatus," in the same neat form as its predecessors, as a volume of over 500 pages with 186 illustrations. Prof. Cadeac examines first the mouth in solipeds, wounds, tumors, foreign bodies, etc.; the study of the diseases of the dental apparatus is very complete. After the solipeds, the same part of the apparatus is treated in bovines, in ruminants and in carnivora. The diseases of the salivary glands, pharynx, guttural pouches, œsophagus and abdomen follow in the same manner and same arrangement. The material from which the professor has taken to complete this work, is the result of the last ten years' observations. Each apparatus, each organ forms a special chapter, and the classification is like that of the previous volumes of the encyclopedia. There is no doubt that this addition will meet with a success similar to that of the other portions of the undertaking of Prof. Cadeac. It deserves it.

* * *

THE PROCEEDINGS OF THE A. V. M. ASSOCIATION and the details of the grand meeting of 1909 have also been received.

Record of the forty-sixth annual convention of the National Veterinary Organization of the United States, which was held in Chicago from the 7th to the 10th of September, 1909, and edited by the Chairman of the Publication Committee, Dr. C. J. Marshall. This volume comes as a valuable acquisition to American veterinary literature and history. Like its predecessors, it contains the full description of all the events that took place in those days of September. It relates the work of the various committees; it gives a handsome account of the financial standing; it fills numerous pages for reports and original papers and discussions that followed, and it gives a good description of the work done at the clinics connected as one of the events of the meeting. The sociable part and list of members are also mentioned. As a whole and in its general appearance this volume, of course, must resemble those that were issued before it, but the reading of the original works which occupy more than one-third of the book must be looked into by every one, as it shows that veterinarians of America are workers, and that they are making for themselves among scientists and searchers of the world at large, an important place.

It has been our duty for several years back to watch and record the work done; it has always been our great satisfaction and pride to note the progress that has been made. Great every year, greater every following one, those meetings are the field from which these grand records of proceedings are made. We wonder what San Francisco can do this year to be greater than Chicago, Philadelphia and all those before. Veterinarians that have not been at Chicago will do well to hurry and secure a copy of the last publication from Dr. Marshall.

Received also No. 2 of Vol. XV. of the *Archives des Sciences Biologiques*, published at St. Petersburg, containing a contribution of the study of the methods used in the preparation of vaccines by Dr. S. K. Dzeragowski; a record of the antirabic vaccinations at Rostoff by Dr. M. Abramoff; a contribution to the study of the arterial circulation of the pancreas, by A. V. Popova, and a contribution upon the theory of Phagocytosis by Dr. G. Sawtchenko.

From the Bureau of Animal Industry, Circular 160, where from the pen of Chief A. D. Melvin, M.D.C., the work of the Bureau for the suppression of the lip and leg ulcerations of sheep is presented in company with the excellent work of John R. Mohler, V.M.D., the Chief of the Pathological Division, where the history of the disease is related, the characters, symptoms and lesions well illustrated with valuable photos, the cause of the disease and mode of introduction of the microbe that gives rise to it, the economic importance of the disease, its transmissibility and treatment; everything, indeed, receives the proper attention and must be read to be appreciated.

In Circular 159, Dr. Maurice C. Hall, of the Zoological Division of the Bureau, has related some important facts in the life and history of the Gid parasite and their bearings on the prevention of the disease.

No. 2 of Vol. 3 of *Veterinary Notes* from Parke, Davis & Co. has brought me the likeness of Dr. Tait Butler, a good souvenir of a good worker in the profession.

A. L.

* * *

AMERICAN VETERINARY SPECIAL.

In our June issue we reviewed briefly the situation of "the trip to the Coast," predicting the popularity of the "American Veterinary Special," referring to the earlier section of this train, suggested by Dr. Merillat as meeting the needs of those who might desire to take the trip through the "Yellowstone" going, which requires a week's time (hence the necessity of starting a week earlier), while perhaps the majority, who would find it necessary to make the trip as expeditiously as possible, would leave on the second section August 30th. We also took the liberty to suggest that it might be possible to arrange with the railroads for stop-over privileges returning, to meet a third group of attendants who delight in spending a week with their families in side trips after the convention is over. Right after we went to press we received another communication from Secretary

Lyman (which with some later revisions and additions appears in this number), that removes a great deal of conjecture.

In reading the communication referred to on page 525, you will see that stop-over privileges are granted until October 31st, so that the Yellowstone Park or *any* side trip that appeals to you can be made returning, on your tickets purchased for the "American Veterinary Special" going. That alone tends to increase the popularity of that train, but when you have read some of the details of the trip going, as portrayed by Secretary Lyman, you will decide that it is the *only* way to go and get the full benefit of the trip, coupled with the society of your fellow members; and just as soon as you have reached that decision, communicate it to Dr. Lyman *at once*, as he must have a hundred names to transmit to the transportation committee in order that they may get the privileges and the rates that are offered for that train. Do not be confused by the statement in which he says night of August 30th (leaving hour to be announced next month), and the itinerary published in the June REVIEW, which says August 31st, 12-01 a. m., which *may* be a little misleading, unless you give it a moment's thought. It is simply midnight of August 30th, and one minute later. Parties leaving with the "special" from Chicago are advised to arrive at Chicago early in the evening, as it may be possible to arrange to leave in the middle of the evening of August 30th instead of one minute after midnight, as 12.01 August 31st signifies. A careful perusal of Dr. Lyman's letter will also enlighten those further west, and not making Chicago their starting point, as to how to arrange to go by that train and get the benefit of the special rate. Dr. Lyman's address from now until convention time is P. O. Box 901, Hartford, Conn.

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RETROSPECTION.

In the midst of our interest and enthusiasm in anticipation of the coming meeting of the A. V. M. A. at San Francisco, let us for a moment look backward into the vista of the past

and recall a meeting of the *then* U. S. V. M. A. at the veterinary school of the University of Pennsylvania in 1894. As a frontispiece to this number, we have reproduced one of the best photographs of a convention group that it has ever been our good fortune to see. And, even though we were obliged to reduce it one-half in order to make it conform to our page, we feel sure that many of our readers will be able to recognize the faces of old friends, most of whom are still with us, and many that have crossed the great divide. Most of the faces are known to us and are dear to us among both those that are living and those that are dead; and, with the kind assistance of Drs. Hoskins, Harger, Marshall and Gill, we have been able to place the names of most of them at the bottom of the picture, but there are a few we have been unable to recall. We were prompted to reproduce this picture for our readers because of the fact that it contains the portraits of great men, some of whom have ceased to take an active part in our national conventions because of their absence from our country, and others because they have been called to their Maker. Among those in the first group are Liautard and Salmon, both hale and strong, but in other lands. The distinction of these two great veterinarians and the great work they have both done for the veterinary profession in America is too well known to need repetition here. They are both past presidents of the U. S. V. M. A. Dr. Liautard served from 1875 to 1877, and again from 1886 to 1887, and Dr. Salmon from 1897 to 1898.

In the second group, or those that have been called to their Maker, we find in this picture Drs. Leonard Pearson, A. W. Clement, John Faust, D. J. Dixon, W. E. B. Miller, and perhaps some others whose faces we do not recall or whose death we do not know of. Three of these last, Drs. Miller, Clement and Pearson, and in the order named, served the national organization as its president in the years 1883 to 1885, 1898 to 1899, 1899 to 1900, respectively. We are impressed with the strikingly characteristic pose in this picture of Dr. Leonard Pearson, who, prominent in the profession even at that time (although

one of its young members), afterward developed into one of its strongest and most able leaders, and at the time of his death had attained international fame and had contributed more to the veterinary profession than can ever be estimated. There are also several past presidents in the picture who are active members of the organization at the present time. For example, Robertson, Hoskins, Williams and Butler. Altogether, we believe this picture of a group of veterinarians who were in attendance at the national convention in Philadelphia sixteen years ago is peculiarly valuable, and we are glad to be able to give it to our readers that it may become part of a volume that they can preserve in their libraries indefinitely.

CHANCELLOR HENRY MITCHELL MACCRACKEN, D.D., LL.D., of New York University, was the recipient on Commencement Day of a beautifully engrossed parchment, expressive of the good wishes of the several schools of the university, on his retirement, which followed the conclusion of the commencement exercises. The heading consisted of his name and degrees in gold and violet, (violet being the university color). Following that was the prettily engrossed inscription: "The members of the several faculties of New York University desire to tender you an expression of appreciation of the important services rendered by you as chancellor of the university. We wish, further, to express our sympathetic recognition of the years of courageous and arduous labor which you have devoted to New York University and of the substantial achievements which have crowned your efforts. We also sincerely hope that you may enjoy for many years health, prosperity and a well-earned rest. "New York University, Commencement Day, 1910."

About a hundred signatures of representatives of the faculties of the several schools were appended.

DR. E. A. RICHARDSON, of Goldfield, Ia., wrote under date of April 4th: "To-day I realized with a start that I had not renewed my subscription to the REVIEW, and as I do not want to miss the April number, please forward this month's without fail, as there might be one article worth the year's subscription."

DR. V. J. AYRES has recently located in Sterling, Col.

ORIGINAL ARTICLES.

EXPERIMENTAL INVESTIGATIONS AND CLINICAL FINDINGS CONCERNING THE APPLICABILITY OF NOVOCAIN FOR THE PURPOSES OF VETERINARY MEDICINE—INAUGURAL DISSERTATION.*

BY ANDREAS FEHSE.

(*Abstract.*)

After a brief summary of the favorable results of Novocain as an anæsthetic agent in the human subject, the author proceeds to give an account of his experiments with Novocain in domestic animals, in regard to its toxicity as well as anæsthetic effect. Up to the present time (1906), no experiments with this drug in veterinary medicine had been published, and it is probable that none had been made. The author's investigations were carried out in part in the clinic for small domestic animals, of the Berlin Veterinary High School, under the direction of Professor Regenhagen.

The following plan served as a basis for the investigations:

(a) Intoxication experiments upon frogs. Subcutaneous application.

(b) Intoxication experiments upon guinea pigs. Subcutaneous application.

(c) Intoxication experiments upon dogs. Subcutaneous application.

*Experimental Investigations and Clinical Discoveries Concerning the Use of Novocain in Veterinary Practice, presented at the meeting of Veterinary-Medical Doctors, of the United Medical Faculties of the Grossherzoglich-Hessischen Ludwigs-Universität zu Giessen, from experiments made at the Clinic of Small Domestic Animals of the Königl. Vet. High School, Berlin, during 1906 and 1907.

(d) Endermatic injections, for the determination of regional anæsthesia in dogs, with and without the addition of Suprarenin.

(e) Anæsthetizing experiments upon the eyes of: (1) dogs; (2) horses.

(f) Experiments concerning the practical applicability of Novocain as a local anæsthetic in animals, with and without the addition of Suprarenin.

(g) Diagnostic injections in horses.

(h) Experiments concerning the durability of Novocain solutions.

As the first three of these studies are of minor importance to practising veterinarians, we will not include them in this abstract, but proceed with such portions as will prove of greater interest.

Endermatic injections for the determination of the regional anæsthesia, with and without addition of Suprarenin.

The influence of Novocain upon the tissues was studied with the aid of the endermatic wheals in a dog, and the effect of Novocain was compared with a cocain solution of the same concentration. In another series of experiments, the author examined the anæsthetic action of Novocain in combination with Suprarenin. For this purpose he employed 0.1 gramme Novocain and 0.00045 gramme Suprarenin boricum.

The quantity of the injected solution amounted to 1 c. cm. respectively, in all the cases.

CONCENTRATION OF THE SOLUTION.	NOVOCAIN.	COCAIN.	NOVOCAIN SUPRA- RENIN.
0.25 per cent.	Immediate diminution of sensibility. Anæsthesia about 10 minutes.	Immediate diminution of sensibility. Duration of anæsthesia about 12 minutes.	Immediate diminution of sensibility. Duration of anæsthesia about 40 minutes.
0.5 per cent.	Immediate onset of anæsthesia. Duration about 20 minutes.	Immediate onset of anæsthesia. Duration about 25 minutes.	Immediate onset of anæsthesia. Duration about 80 minutes.
1.10 per cent.	Immediate onset of anæsthesia. Duration about 60 minutes.	Immediate onset of anæsthesia. Duration about 70 minutes.	Immediate onset of anæsthesia. Duration about 2 hours.

From these experiments, results in the first place that Novocain is a local anæsthetic. The vessels are not influenced in any

way by Novocain, for the author was never enabled to note the occurrence of hyperemia or anemia. No damage of the tissues occurred, as the wheals invariably disappeared without leaving a trace of their presence. With special reference to the anæsthetic action of Novocain it seems to be hardly inferior to that of cocain, according to the above experiments. Concerning the combination of Suprarenin with Novocain these experiments show that Suprarenin induces an essential prolongation of the Novocain anæsthesia. Hence, Novocain both with and without the addition of Suprarenin, is found to be an efficient local anæsthetic.

Experiments Concerning the Practical Use of Novocain as a Local Anæsthetic Agent.—The author has repeatedly had occasion to study the anæsthetizing effect of Novocain in operations, performed in the clinic for small domestic animals, of the Veterinary High School in Berlin. The following results were obtained in this connection:

Experiment No. 1.—Dog, male, about four years old, with a neoplasm the size of a hen's egg in the lumbar region of the back. This was injected in its circumference with 4 c. cm. of a 1 per cent. Novocain solution. After seven minutes, the neoplasm was enucleated, and the wound closed with eight sutures. The operation, which lasted about ten minutes, was performed under complete anæsthesia. Healing by first intention.

Experiment No. 2.—Dog, male, about three years old, contused wound of last three caudal vertebræ. The injured extremity of the tail was amputated after preliminary injection of 4 c. cm. of a 1 per cent. Novocain solution around the field of operation. Six minutes after injection the operation was performed under complete anæsthesia.

Experiment No. 3.—Amputation of second toe of left hind foot in a dog, after injection of 4 c. cm. of a 1 per cent. solution at the root of the toe. The operation was performed seven minutes later without any evidence of pain.

Experiment No. 4.—St. Bernard, ten years old, male. Neoplasm the size of a hen's egg in the middle of the left scapular region. Subcutaneous injection of about 7 c. cm. of a 1 per cent.

Novocain solution around the neoplasm. The operation lasted about fifteen minutes and was performed eight minutes after the injection under complete anæsthesia. The wound was sutured and healed by first intention.

Experiment No. 5.—Collie, male, three years old. Neoplasm size of hen's egg on external side of right hind leg. Injection of 8 c. cm. of 1 per cent. Novocain solution. At the end of seven minutes complete anæsthesia which lasted during operation.

Experiment No. 6.—St. Bernard, male, six months old. Umbilical hernia, size of hazel nut. Injection of 2 c. cm. of a 2 per cent. Novocain solution five minutes later; the operation was performed without pain. Healing by first intention.

Experiment No. 7.—Retriever, male, six months old. Amputation of two claws, with injection of 2 c. cm. of a 2 per cent. Novocain solution on each side. After six minutes, there was a sufficient anæsthesia for the operation.

Experiment No. 8.—Dog, female, twelve years old, with sarcoma the size of a fist at the interior surface of the left hind leg. The operation was performed under good anæsthesia six minutes after the injection of 4 c. cm. of a 2 per cent. Novocain solution at the floor of the neoplasm.

Experiment No. 9.—Collie, female, six years old, with a neoplasm the size of a walnut in the left frontal region. Injection of 3 c. cm. of a 2 per cent. Novocain solution. Painless performance of the operation five minutes later.

Experiment No. 10.—Dog, female, eleven months old, with umbilical hernia, size of a pigeon's egg. Injection of a 2 per cent. Novocain solution. After six minutes good anæsthesia during the operation.

Experiment No. 11.—The same operation was performed with equally good results in a puppy of ten weeks, using a 2 per cent. Novocain solution.

Experiment No. 12.—Pomeranian, female, six years old, mammary carcinoma, the size of a pigeon's egg. Injection of 2 c. cm. of the 2 per cent. Novocain solution. During the per-

formance of the operation, five minutes later, the patient gave evidence of slight pain.

In the following operations upon dogs a 1 per cent. Novocain solution was employed with addition of Suprarenin.

Experiment No. 13.—Poodle dog, male, ten years old. Atheroma on back, size of hen's egg. Injection of 4 c. cm. of the above-named solution. The dog was operated upon five minutes later, standing up; the operation proved painless, and the wound healed by first intention.

Experiment No. 14.—Dog, male, two years old. Periostitis, ossificans of second and third phalanx of third toe of left hind foot. Injection of 4 c. cm. of the solution, performance of operation five minutes later, under very good anæsthesia. Healing by first intention.

Experiment No. 15.—Dog, male, seven years old. Neoplasm size of walnut at the prepuce. Injection of 5 c. cm. of the above solution. Five minutes later there was complete anæsthesia. Besides the above-mentioned operations, numerous others were performed.

Anæsthetizing Experiments Upon the Eyes of Horses and Dogs.—(a) Dogs. These experiments were performed in part upon laboratory dogs, and in part upon dogs which had been admitted to the clinic for small domestic animals, on account of eye trouble. The aqueous Novocain solution that served for the experiment was 5 per cent. and 10 per cent.

Novocain in 5 Per Cent. Solution.—Experiment No. 1.—Bull dog, male, age three months, was admitted to clinic on account of a new formation at the third lid of the left eye. About fifteen drops of the Novocain solution were instilled into the affected eye. At the end of four minutes, the third lid was excised; the dog gave evidence of pain.

Experiment No. 2.—Small dog with severe follicular conjunctivitis of left eye; instillation of about fifteen drops of the Novocain solution; six minutes later excision of nictitating membrane. Operation was painless.

Experiment No. 3.—Small pomeranian, removal of nictitating membrane of right eye, seven minutes after instillation of Novocain solution. The dog gave evidence of very slight pain only.

Experiment No. 4.—Terrier; the right eye was anæsthetized, and about thirteen minutes later the nictitating membrane was removed. Operation slightly painful.

Experiment No. 5.—Excision of third lid, six minutes after the right eye of a dog had been anæsthetized. Operation completely painless.

Experiment No. 6.—Extirpation of nictitating membrane of left eye in the same dog on the next following day, 33 minutes after anæsthetizing. Operation entirely painless.

Novocain in 10 Per Cent. Solution.—Experiment No. 1.—Collie dog; installation of about fifteen drops of this solution into the left eye. Three minutes later the third lid was removed, the dog giving evidence of severe pain.

Experiment No. 2.—Excision of third lid of right eye in the same dog on the following day, five minutes after anæsthetizing with this solution. The dog gave evidence of very slight pain during the operation.

Experiment No. 3.—This solution having been allowed to act for about seven minutes on the left eye of a Pomeranian, the conjunctiva and third lid were compressed with forceps; this caused no utterance of pain. After about fifty minutes the third lid was removed, without the dog expressing any pain.

Experiment No. 4.—Extirpation of nictitating membrane of left eye, fifteen minutes after anæsthetizing; there was some slight sensitiveness to pain.

Experiment No. 5.—Both eyes of a dog were anæsthetized, and nine minutes later the removal of the nictitating membranes was accomplished entirely without pain.

Experiment No. 6.—Application of Novocain in powder form to both eyes of a rough terrier, at intervals of three days. There immediately followed a marked congestion of the scleral vessels, but this subsided after about one hour. The accommodation

was not interfered with in any way. Not the slightest pathological change in the cornea could be found in the course of observation during the next three days.

1. *Novocain in 5 Per Cent. Solution in Horses.*—Horse No. 1.—The left eye was rendered anæsthetic with this solution. No anæsthesia was apparent after three minutes, on pressure with forceps upon the conjunctiva and third lid. After two more minutes, anæsthesia was present to a slight degree. A little more solution was instilled, and after about five minutes the third lid was removed, the horse giving evidence of slight pain.

Horse No. 2.—Slight anæsthesia was perceptible after five minutes. Extirpation of the nictitating membrane of the left eye after about five minutes more; the horse experienced but little pain.

Horse No. 3.—Removal of third lid ten minutes after the left eye had been anæsthetized. Slight evidence of pain on the part of the horse.

2. *Novocain in 10 Per Cent. Solution.*—Horse No. 1.—Removal of third lid of right eye, ten minutes after anæsthetizing. The operation proved painless.

Horse No. 2.—Excision of nictitating membrane of right eye nine minutes after anæsthetizing. The horse gave no evidence at all of pain.

Horse No. 3.—Extirpation of third lid of right eye thirty minutes after anæsthetizing. The operation proved painless.

The above experiments served to show that Novocain is capable of producing anæsthesia in the eyes of animals. While the 5 per cent. solution sometimes fails to cause a complete anæsthesia, the ten per cent. solution is to be very highly recommended. In the first place, the effect follows promptly in about seven to ten minutes; and secondly, the author has never been able to note any symptoms of intoxication or changes in the eye, such as disturbance of accommodation or inflammatory manifestations of the cornea and palpebral conjunctiva. Finally, he did not find in any instance that either the dogs or the horses gave

evidence after the instillation of a painful or tickling sensation by rubbing of the eyes.

Diagnostic Injections in Horses.—These experiments served to show that a good result may be obtained by doses of 0.5 to 0.6 gramme of Novocain, when injected into horses for diagnostic purposes. The effect follows after about eight to twenty-five minutes, without any side manifestations, and lasts for about one hour.

Experiment Injections.—Bay gelding, eight years old, rather marked lameness of left forefoot for a few days past. Treatment not yet instituted. Diagnosis: Bilateral ossification of cartilages of hoofs. Injection of 8 c. cm. of a 3 per cent. Novocain solution into each volar nerve. Twelve minutes later the animal was made to canter; the lameness had about subsided. Four minutes afterward the lameness had entirely disappeared and did not return again until three-quarters of an hour later.

Brown mare, five years old, lame in left forefoot for past twenty-four hours. Diagnosis: Distortion of hock and pastern joint. Injection of 10 c. cm. of a 3 per cent. Novocain solution into each volar nerve. Nine minutes later the lameness had disappeared.

Brown mare, about seven years of age. Very pronounced lameness of left forefoot for three days past. Treatment not yet instituted. Diagnosis: Arthritis and peri-arthritis of pastern joint. Injection into each volar nerve of 10 c. cm. Novocain in 3 per cent. solution with the addition of Suprarenin. Novocain, 0.1 gramme; Suprarenin, 0.00045 gramme. Ten minutes later the horse was made to canter; the lameness had not entirely disappeared, but in five minutes afterwards the horse did not show any lameness whatever.

Brown gelding, six years old. Slight lameness of right forefoot of long standing. Diagnosis: Ossification of cartilage of hoof. Injection of 10 c. cm. of a 3 per cent. Novocain solution, with addition of Suprarenin into volar nerve on each side. Lameness had disappeared at end of ten minutes and did not return until an hour and a quarter afterward.

Black gelding, eight years old. Very pronounced lameness of right forefoot for two days past. Diagnosis: Distortion of hock and pastern joint. Injection of 10 c. cm. of a 3 per cent. Novocain solution into volar nerve on each side. Ten minutes later the lameness had entirely disappeared.

Experiments Concerning Durability of the Solutions.—1. A newly prepared Novocain solution, 10 per cent. was boiled seven times in a test tube, and a guinea pig weighing 240 grammes received of this a subcutaneous injection of 0.168 gramme Novocaine—0.7 gramme per kilo of body-weight. The guinea pig died about three hours later under the typical symptoms of intoxication.

2. A Novocaine solution, 2 per cent. two months old, was boiled eight times, and 5 c. cm. were injected into a dog for the extirpation of a tumor at the anus. The dog gave no evidence of pain during the operation.

3. A female pointer, seven years of age, presented a neoplasm the size of a walnut near the right nipple. Injection of 4 c. cm. of a 1 per cent. Novocain solution three months old. The operation was performed twenty minutes later under good anæsthesia.

4. Pomeranian, male, twelve years old. Pedunculated neoplasm the size of a goose egg at the plantar side of the right carpal joint. Injection of 6 c. cm. of a 2 per cent. Novocain solution three months old for local anæsthesia. Painless operation ten minutes later.

5. Dog four years of age, with an ulcer at the tip of the tail. Local anæsthesia with a 2 per cent. Novocain solution four months old. Amputation of last three caudal vertebræ; operation painless. Healing by first intention.

6. Poodle, male, seven years old. Neoplasm, size of walnut, on the right cheek. Local anæsthesia with a 2 per cent. Novocain solution five and a half months old. Operation proved painless.

The Novocain solutions which served for the above experiments were kept in white flasks, exposed to the action of light. Until about the end of the fifth month the solutions remained

perfectly clear and white. A slight yellowish discoloration did not occur until the beginning of the sixth month, but this did not interfere with the anæsthetic effect as shown by Experiment No. 6. Although some of the solutions were boiled several times, a difference in their action as compared to that of a newly prepared solution could not be demonstrated.

Upon the basis of his experiments, the author defines Novocain as a very efficient local anæsthetic, and a very valuable contribution to the veterinary pharmacopeia; he gives expression to the hope that Novocain will gain the position its value entitles it to in veterinary practice.

SUMMARY.

Novocain is a rapid and reliable anæsthetic, which produces absolutely no irritative phenomena in animal tissue, even when employed in concentrated solution. For operations, the subcutaneous or cutaneous application of a 1 to 2 per cent. aqueous solution is sufficient. Novocain exerts no deleterious effect upon tissue repair. In eye operations a 5 to 10 per cent. Novocain solution, instilled into the conjunctival sac, produces within a relatively short time an anæsthesia entirely sufficient for operative procedures. A harmful influence upon the function of the eye is not apparent. Even when brought in substance upon the cornea, Novocain does not give rise to local pathological changes other than an episcleral vascular congestion.

Aqueous Novocain solutions can be kept for a long time, without losing any of their efficiency. It has a relatively low degree of toxicity; large amounts may be injected, and hence large body segments can be anæsthetized without untoward results. Experiments show cocain to be about five times more poisonous than Novocain. Subcutaneous injections of 0.5 to 0.6 gramme of Novocain are entirely sufficient for diagnostic purposes, in lameness of horses, a toxic action was not observed in any instance. The anæsthetic action of Novocain may be very considerably increased by the addition of Suprarenin.

APHTHOUS FEVER OR FOOT-AND-MOUTH DISEASE.*

BY HARRY E. STATES, V.M.D.

Because of the widespread interest, due to the recent outbreak of this troublesome, infectious disease in Wayne County, your good secretary has assigned this subject to me in such a way that it was impossible for me, as a member of the Committee on Infectious Diseases, to do otherwise than attempt to bring something before you. It was my good fortune, with a number of our members, to see a number of cases in Livonia township recently. With this knowledge and some help from recent publications by Drs. Melvin, Pearson and others, I hope to be able to review the important points of the disease as to the history, cause, symptoms, diagnosis, prevention, quarantine and eradication.

Briefly, the history of the recent outbreak in Michigan is as follows: Sometime in October, 1908, a herd of young feeders, which later developed foot and mouth disease, was purchased in the stock yards in Detroit, and taken to a farm in Livonia township. By the sale and exchange, and the moving of these cattle over the same roads, the hauling of water, from what proved later to be the infected farm, a number of herds in the vicinity became infected. The disease was suspected by local veterinarians, and later confirmed by experienced government veterinary inspectors. Strict quarantine of infected herds was enforced. The cattle were condemned, appraised, killed and buried and the premises thoroughly disinfected, and the disease is stamped out, all having been accomplished in a thorough business-like manner by the Bureau of Animal Industry with its efficient inspectors, working in conjunction with the State Live Stock Commission.

* Read at the Twenty-seventh Annual Meeting of the Michigan Veterinary Medical Association at Lansing, Mich., February 3, 1909.

Condemned animals were appraised at full value. Two-thirds of the appraisment is paid by the Federal Government and one-third by the State. The cost of burial, of disinfection, and of damages to forage and stables through necessary cleaning and disinfection are shared in a like manner.

Aphthous Fever, or Foot-and-Mouth Disease, is an acute infectious and highly contagious disease affecting cloven-footed animals. It occurs most frequently among cattle, sheep, goats and swine. It has also, in some rare instances, occurred in horses and some observations denote that dogs, cats and even poultry may be affected by it. The large herbivora, as found in zoological gardens—camels, giraffes, deer of all kinds and elephants—are susceptible. The disease is also transmissible to man; such transmission results most frequently in children and from the use of the raw milk of diseased cows. Aphthous fever in man is usually not a dangerous malady, but it is recorded that in some outbreaks there have been many deaths.

The disease is an old one, but its most extensive destructive outbreaks have occurred during the past two hundred years. The several invasions of European herds and flocks by foot-and-mouth disease have come from the East towards the West, have been very extensive covering great regions, involving several countries, and have sometimes persisted many years. The invasion of England, which began about the beginning of the second third of the past century, continued nearly fifty years. The German invasion, which began in 1888, continued seventeen years. In 1897-1899 more than 1,000,000 animals were attacked in Holland. There was a small outbreak of foot-and-mouth disease in Western Massachusetts and in Eastern New York in 1870, and an outbreak in New England, centered around Boston, in 1902-3. The latter outbreak involved 244 herds in four states and necessitated the destruction of 4,712 animals.

The rate of mortality from foot-and-mouth disease is low, but the destruction of values and the losses resulting from it are high. It was estimated in 1875 by Fleming, the great English authority, that the losses to the farmers in England from foot-

and-mouth disease then amounted, upon a very conservative basis of appraisal, to 13,000,000 pounds sterling (\$65,000,000). The loss upon each herd attacked by this disease amounts to from 20 per cent. to 50 per cent. of its value. The consideration of this fact in connection with the knowledge that foot-and-mouth disease spreads with such remarkable facility that, if uncontrolled by public measures, it may attack from 25 to 75 per cent. of the herds of a district will give an idea as to the potentialities for harm that accompany outbreaks of this disease, and will explain why farmers in countries that have passed through visitations of this plague dread it more than any other scourge of cattle.

In 1871, about 700,000 cattle were attacked by foot-and-mouth disease in England. The average loss on each bovine animal attacked was three pounds, making the total loss about \$10,000,000. An outbreak of about the same dimensions occurred the same year in France; this outbreak was repressed, but a re-infection began in 1893 and continued to increase and spread until 1900, after which it was fought back until 1906, when there was again a considerable increase. During twelve years, up to 1905, 16,000,000 animals were attacked by foot-and-mouth disease in Germany. The losses to German farmers from this cause amounted to well about \$100,000,000, and the cost to the government of measures applied to control the disease was about \$30,000,000. During the past few years, most of the countries of continental Europe, excepting Scandinavia, have had to keep up a constant, difficult and expensive warfare against foot-and-mouth disease.

In a district or a country where foot-and-mouth disease exists there prevails, and must continue until the disease is eradicated, a state of unrest and uncertainty with relation to all operations affecting live stock. No one can foresee when his herd will be attacked, every animal brought to premises where the disease has existed is liable to develop the disease; any purchase, not only of animals of susceptible species, but of hay, straw, manure or even grain, if in bags that may have been on infected premises, may introduce the contagion. The combined unrest,

annoyance and loss that result under such circumstances destroy all security and profit and lead to a great restriction in cattle trade and cattle keeping. Instances are numerous in other countries, in which owners of pure bred herds have discontinued breeding and have sold their cattle, as a result of loss and discouragement from this disease.

So long as foot-and-mouth disease prevails in this country, the permanence of our export trade in live cattle and sheep is in jeopardy. Experience shows that English restrictions on such shipments will be continued until the last trace of disease has been eradicated. These restrictions result from the fear of English farmers that their country may become reinfected and that the memorable and terrible losses they have suffered from the ravages of this disease may be repeated. Great Britain has been free from foot-and-mouth disease since 1901.

The cause of Aphthous Fever has not yet been isolated, but the properties of the virus of the disease have been studied. It is known that this virus may retain its vitality and virulence in a stable or a manure pile for as long as six months, that it will withstand freezing, and that it may be destroyed by disinfectants. Dark, damp places are most suitable for the prolongation of its life. The virus appears also to live on and in the bodies of recovered animals for several months, so that such animals are a source of danger if they are permitted to come into direct or even indirect contact with susceptible animals. Fleming reports a case wherein the virus of aphthous fever retained its virulence for four months in a feeding trough exposed all of this time to the weather. He cites another instance wherein the virus persisted five months in a hay rack that had been used by diseased cattle, and the infection was carried in this hay rack to cattle on another farm to which it was taken.

The virus of Aphthous Fever spreads more easily than that of any other known disease of cattle; it is carried most readily and most surely by affected animals, or by animals that have come from infected herds or premises. It may also be carried, and in numerous authenticated instances has been shown to have

been carried in hay, straw, grain, manure, stable utensils, blankets, bags, etc., from premises where diseased animals have been. It is also carried upon the hands, boots, or clothing of persons who have been on infected premises. Small animals may transport the contagion just in the way it is carried by inanimate objects, so that it is necessary to guard against the spread of infection by dogs, cats, poultry and pigeons. There are numerous examples of the carriage of infection long distances wherein all means of communication excepting by birds have been excluded. Bolz reports in 1904 a case wherein the virus persisted in a manure pile for six months and caused a new outbreak when cows came in contact with the scattered manure. In the recent outbreak in Pennsylvania some cows became infected while walking across a railroad unloading-platform over which some exposed cattle that later developed foot-and-mouth disease had passed some hours before; these cows were later placed among other cattle and have infected herds.

Calf buyers and cattle dealers who go from farm to farm and from herd to herd have often carried infection, presumably upon their boots or clothing. Such persons may unknowingly come in contact with the disease in its earlier stages or in its later stages and may fail to recognize that the animal is sick and that they are exposed and then may carry the seeds of disease to other premises. During outbreaks of foot-and-mouth disease, visits of perambulating cattle dealers, of castrators and of careless cow doctors are particularly dangerous. There is, however, no danger from the visits of veterinarians who observe certain precautions.

Cattle hides, calf and sheep skins, wool, milk and the carcasses of slaughtered diseased or exposed animals may convey contagion. Infested stock yards and stock cars and the manure they contain are sources of disease.

The virus may be taken up by exposed animals through the digestive or respiratory tract, or infection may result from inoculation upon the skin or into the blood stream.

The period of incubation, or the interval between exposure and the occurrence of the first symptoms, is usually from two to five days. This time may, in exceptional cases, be as short as twenty-four hours and it may be as long as twelve days.

The symptoms develop in a rather regular manner and so it is possible to divide the disease into stages.

The first stage begins with more or less dullness and inappetence and is accompanied by fever. The temperature may not be more than 103 degrees F., or it may be as high as 105 degrees to 107 degrees F. This stage is characterized, at first, by dryness and warmth of the muzzle, by a dry, hot mouth, evidence of discomfort of the mouth is shown by slow, careful chewing, by some awkwardness in grasping food, and by grinding the teeth. If an effort is made to examine the mouth it is held tightly closed. Very soon the mouth becomes unduly moist from the increased secretion of both mucus and saliva. As the tenderness and pain increase, the animal works the tongue and cheeks and makes a suckling, clicking or smacking sound. There is considerable accumulation of saliva in the mouth, some collection of froth about the lips and strings of sticky saliva may descend from the mouth. This condition is more striking at a somewhat later period of the disease. It soon becomes apparent that it is painful for the animal to take up food with the tongue and lips and if hard, solid food is taken, as half of an ear of corn, the head is held high and to one or the other side, so that the corn will gravitate to a less sore place in the back of the mouth where it may be crushed and then swallowed. Not infrequently, such a mouthful will be dropped, after the pain it causes is experienced. Sometimes during this stage or, perhaps, not until a day or two later, there is evidence of soreness of the feet, as shown by a tendency to shift the weight from one foot to another, by a quick tripping or jerking motion or by an inclination to lie down more than is usual. The first stage lasts one, two or three days.

The second stage, or that of eruption, is characterized by the occurrence of vesicles, appearing as water blisters, in and about the mouth, about the feet and upon the teats and udder. For the

mouth eruptions, the favorite seats are the following: the ends and margin of the pad, the tip, borders and top of the tongue, the front and face of the pad, the inside of the upper lip, the inside of the lower lip, the borders of the lips, the muzzle, the lower surface and the frænum of the tongue, the gum and the lower jaw, the inside of the cheeks, and the roof of the mouth. Vesicles may appear about the nostrils.

Vesicles or blisters appear upon the feet between the hoofs, especially at the front of the cleft; about the coronary band, about the base of the supernumerary hoofs and upon the heels. The vesicles upon the teats are more frequently seen about the orifice and may also cover the teats, and sometimes occur on the skin of the udder. This condition causes much pain. The opening of the teat may be closed by inflammation and swelling resulting from the eruption. Vesicles appear first as small elevations of the superficial layers of the mucous membrane or skin, from $\frac{1}{8}$ to $\frac{1}{2}$ inch in diameter. They are of a greyish color. Vesicles may not become larger or they may increase in size to an inch or more in diameter, or several may become confluent and loosen and raise up an area several inches in diameter. Such extremely large blisters occur upon the tongue and muzzle. The vesicles contain at first a clear, straw colored serum which later becomes cloudy. The membrane covering them is thin and it soon breaks. When the vesicles break, the loosened epithelial or epidermal layer remains for a time attached at the borders, forming a pocket, and as it tears more, the loose shreds of membrane hang about the borders of the denuded area until these become detached and fall away.

Vesicles usually appear first in the mouth and almost simultaneously, or a few hours or a day later, on the feet and udder. Sometimes the vesiculation is observed in but one location. In cattle it is the mouth that is most likely to show lesions, while among sheep and hogs the lesions may be confined to the region of the feet. Vesicles may be few and small or they may be large or numerous. The resulting discomfort and constitutional disturbances are usually in proportion to the extent of the pri-

mary eruption. The affected areas are exceedingly sensitive and painful.

As the vesicles form, the fever abates and when the vesicles rupture, the temperature falls nearly or quite to normal. The subsequent course of the disease is free from fever, unless there is very extensive local inflammation. Vesicles rupture very soon after they form, especially in the mouth, where the membrane covering them is softened by moisture and sustains violence from the constant motion of the tongue, cheeks and lips. About the feet and upon the teats the vesicles last longer. The second stage lasts one to three days.

The third stage, or that of erosion, is characterized by the appearance of raw, denuded surfaces that result from the peeling off of the outer layers of the mucous membrane or skin that have been undermined, loosed and raised up by the fluid within the vesicles. The raw surfaces thus exposed are a bright, rosy red or even scarlet color. They are bounded by a clear cut, abrupt margin and are slightly depressed below the level of the surrounding surface. The surface of the sore is at first smooth; afterwards it is covered by granulations, and later by fluid pus or by a more or less tenacious dirty yellow colored exudate. The surface of the erosion, if upon the cheeks or tongue, may show red, naked papillæ denuded of their epithelial covering.

The soreness of the mouth is in some cases sufficient to prevent the animal eating or drinking for several days, perhaps for a week. Under these circumstances, milk flow ceases and emaciation is rapid. If excessively sore feet add to the discomfort, constitutional effects are more marked. Pregnant animals may abort. In many instances the udder becomes inflamed, especially in fresh cows, and may be permanently damaged or ruined. There is often irritation and discharge from the eyes and nose. Many animals cough, revealing irritation of the bronchial mucous membrane or of the throat.

The disagreeable sensation and the pain of the mouth may cause the animal to work the tongue and jaws and to suck and

click the cheeks and tongue in such a way as to make a peculiar (but not wholly characteristic) smacking sound. There is frothing about the lips and drooling of saliva.

The effect of this disease upon milk secretion is shown by the following record of the yield of a herd of thirty-two milking cows (some nearly dry) in Montour county, Pennsylvania. An infected bull was brought to this farm October 27, 1908; the first symptoms among the cows was observed in one animal November 3d, after which the disease developed rapidly in the herd until all were affected.

Date.	Pounds of Milk.
Oct. 31.....	465
Nov. 1.....	468
Nov. 2.....	437
Nov. 3.....	440
Nov. 4.....	430
Nov. 5.....	378
Nov. 6.....	240
Nov. 7.....	168
Nov. 8.....	156
Nov. 9.....	85
Nov. 10.....	62

The third stage lasts from five to ten days, or about a week.

The fourth stage is the period of healing. Preliminary to healing there may be some corrosion and sloughing, during which erosions develop into deep and extensive ulcers. In most cases, however, healing begins rather promptly and continues rapidly. The erosion gradually closes in from the border and become smaller and smaller until it disappears. When healing is taking place the periphery of the sore area is of a gray or yellowish gray color, and one frequently finds a yellow and rather tough

deposit upon the unhealed surface. When this is removed, the base of the sore is found to be of red color.

The after effects of foot-and-mouth disease are sometimes very marked and of long duration. Dr. Salmon has reported that during the outbreak of 1902-3 in New England a few herds that had passed through the disease were left. In about one-third of these cases the owners afterwards asked to have their cattle destroyed, as the cattle were unprofitable or relapses had occurred. Herds that have passed through foot-and-mouth disease are frequently left in an unthrifty, debilitated condition. This is especially true of dairy herds. Young cattle, dry cows and steers are less severely affected.

There is a malignant form of foot-and-mouth disease in which the mortality is high. Outbreaks of this type of disease, in which from ten to fifty per cent. of the attacked animals died, have been reported from several foreign countries. Complications following foot-and-mouth disease are numerous; they consist of abscess formations about the feet, sloughing of the hoofs, abscesses of the udder, garget, gastro-intestinal catarrh and blood poisoning.

When infected herds are not destroyed, but are kept, the premises remain infected for a considerable time and it is impossible to disinfect the premises as long as the live animals remain, as these animals may continue to distribute the seeds of the disease and may re-infect the clean premises a long time after the symptoms of foot-and-mouth disease have disappeared. An attack of foot-and-mouth disease does not necessarily confer lasting immunity. The increased resistance to infection that follows an attack may continue for one to two years or longer, but it may not endure more than six months, and instances have been recorded wherein animals have passed through two, three, four and even five attacks of foot-and-mouth disease. Some animals have contracted the disease a second time within two months.

The diagnosis of foot-and-mouth disease is not a difficult matter where the disease is discovered in its earlier stages in a herd of animals. When one animal is affected or where the disease

has reached a late stage of development there is often difficulty in distinguishing foot-and-mouth disease from some other condition. There is also difficulty with relation to shipped and market animals brought together in large numbers.

The conditions that are most likely to give rise to error are those due to accidental injuries to the mucous membrane of the mouth and a form of inflammation of the mouth caused by fungi, known as mycotic stomatis.

Wounds, or external injuries of the mouth, are sometimes seen as ulcers upon the edge of the pad opposite the lower incisors. These may be of the shape of the edge of the incisors and manifestly are toothcuts. Such toothcuts may become infected, causing a small ulcer of irregular shape, and sometimes from such a wound there is a cross infection to the inside of the upper lip. Injuries to the tongue, gums or roof of the mouth may be caused by hard, rough objects taken in with the food. Such injuries usually appear as cuts, tears or scratches and not as flat erosions.

From close grazing, especially on a stubble field, cattle may wound the muzzle and lips, or the lining mucous membrane of the lips. Such wounds show as scratches or punctures, or as rough abraded surfaces; they do not have the appearance of erosions and do not have the bright, red color that is characteristic of the lesions of foot-and-mouth disease.

There is another form of injury that requires special mention. Cattle shipped by rail and that have been in the cars for a long time, with little or insufficient food and water, have a tendency to lick and to gnaw the wood work of the car. From this they may sustain injury to the inside of the upper lip and the mucous membrane covering the front of the upper jaw. Sometimes the tongue is rubbed. These injuries appear as defects of the mucous membrane of irregular shape and size, brownish color and rough surface. They may be overlaid with brown, thin crusts. In examining such a lesion, it is well to wash it off with water, whereupon it will be found that the surface is stained and discolored and that it is of rough, warty appearance and looks

"dead" in contrast with the bright red and "blooming" lesion of foot-and-mouth disease. In each cases the mucous membrane of the mouth is likely to be pale and there is little if any salivation, in contradistinction to the injection of the mucous membrane and excessive moisture in foot-and-mouth disease. It is to be remembered that in foot-and-mouth disease the epithelium is lifted up, leaving a smooth surface below, whereas in these traumatic defects there is a mechanical tearing or a dry mortification, leaving a rough, irregular surface. This form of traumatic stomatitis is not accompanied by any evidence of foot-and-mouth disease upon the feet or udder. One may find, however, in cattle that have been shipped a long distance a certain amount of stiffness and lameness, and if they have been standing long in foul cars or stockyards, there may be some irritation between the hoofs.

In mycotic stomatitis, there is no preliminary vesicle formation; a distinct layer, as a false membrane, develops upon the surface of the mucous membrane, and the disease is not contagious, although a large proportion of the animals in a herd may be similarly affected, having been exposed to the same conditions.

One must also distinguish between foot-and-mouth disease and ergotism, foot-rot and foul-claw, and between foot-and-mouth disease and cowpox.

The animal that has passed through an attack of foot-and-mouth disease may be recognized by the presence of unhealed ulcers. These, in their last form, may appear only as small red depressions or as yellow spots. Very slightly depressed areas covered by clean mucous membrane may be seen upon the dorsum of the tongue. Such spots following erosions of aphthous fever have sharply defined borders and the papillæ covering them are more slender, shorter and whiter than upon the surrounding membrane. The spots may be circular and small, or they may be of irregular shape and cover half of the dorsum of the tongue. The healing of an ulcer at the tip of the tongue—a frequent seat—may leave a little puckering of the membrane. Yellowish

scars or puckering of mucous membrane about the margin of the pad and within the upper lip may remain from the healing of ulcers of aphthous fever.

The soreness of the feet and slightly excessive moisture between the digits may remain after the mouth lesions have healed. Sometimes, after extensive eruptions about the feet, the hoof horn develops a ridge similar to that seen on the hoof of a horse that has suffered with laminitis. There may be a partial separation of the horn from the coronary band, especially at the heels.

It is necessary to hold suspected animals in quarantine until doubt can be removed. In some cases information useful in deciding as to vague and indefinite conditions may be obtained by exposing or inoculating a susceptible animal. In Pennsylvania such inoculations are by law prohibited excepting when made by authority of the State Livestock Sanitary Board.

The prevention of foot-and-mouth disease is a difficult matter on account of the virulence of the disease, the ease with which the contagion may be transported and the vitality of the virus in the bodies of apparently recovered animals and in places that have been contaminated by diseased animals.

In former times, attempts to control the disease were regarded as hopeless, and when aphthous fever appeared in a locality it was the custom of cattle owners to inoculate their animals and put them through the disease as quickly as possible. They simply accepted as inevitable the loss of a large part of the value of the herds and flocks in infected regions.

The methods of prevention that have been practiced have consisted: first, in general restrictions on trade in animals of susceptible species and their products and the products of farms in infested districts, and the quarantine of infected herds and premises until danger shall have disappeared or, second, in the method now being practiced in Pennsylvania, consisting in the destruction of infected herds and the complete eradication, with the greatest attainable promptness, of all known centers of infection.

The method of control by quarantine has been practiced suc-

cessfully in a number of instances. On the other hand, attempts to control foot-and-mouth disease by this method have often failed. It is exceedingly difficult to quarantine effectually against aphthous fever, and to attempt to do so is to take great and unwarranted risks. It is necessary that such a quarantine shall be exceedingly rigid, that it shall be faithfully observed to the minutest particular, and that it shall be of long duration. Otherwise, it is not effective, or sufficient to prevent the spread of disease. As long as premises are under quarantine on account of foot-and-mouth disease there can be no feeling of security in the neighborhood, or even in distant places, on account of the remarkable facility with which this disease spreads. For these reasons, and as a result of considerable successful experience in the use of the "stamping-out" method for the control of foot-and-mouth disease, there has developed, in recent years, a strong sentiment in favor of the application of the second method when the distribution of the disease is such as to denote that it may be successfully controlled and eradicated by this means. The "stamping-out" method was applied with complete success and at small cost in proportion to the value of the work, in New England in 1902-3.

If foot-and-mouth disease has been permitted to become very prevalent in a community, then it is not possible to eradicate it by the stamping out method, and the very long, troublesome and, in many respects, painful and oppressive method of controlling the disease by quarantine must be practiced. This means that the work would drag on and quarantine restrictions would have to be continued for years. The successful application of the stamping-out method, even at very large cost, is by far to be preferred.

If the diseased herds are promptly slaughtered and the contaminated premises disinfected, quarantine regulations may be of relatively short duration. On the other hand, if the infected herds are held under quarantine for recovery, the premises they occupy are dangerous and may be a source from which the disease may spread for as long as six months, or perhaps longer, after the recovery of the diseased animals.

TUBERCULOSIS; WHERE ARE WE AT?

By GEO. W. KINSEY, B.S., M.D.C., WHEELING, W. VA.

It is deemed a special privilege by me to have an opportunity of addressing the Ohio State Veterinary Association. While I have a few practical ideas for your consideration, there may be nothing new, but I will feel amply repaid if I am able to create a new thought in the mind of a single member. Any medical man, whether he be a veterinarian or a physician, could scarcely fail to appreciate tuberculosis as the leading and most important pathological topic of our time. A disease that destroys about one-ninth of the human race, a disease that affects all the mammalian animals as well as birds and reptiles. It is shown by statistics that about one per cent. of all cattle slaughtered in this country are affected with tuberculosis and between one and one-half and two per cent. of all swine. The economic loss to the country is a momentous question. The consumption of meat is injured at home and our markets destroyed abroad. Even the consumption of milk, the invalid's salvation, is greatly reduced. But the burning question that interests us most is, where are we at? Are we prepared at the present time to attempt to exterminate tuberculosis from this country? Those who are enthusiastic would probably say the time is ripe, while others perhaps more conservative, have a different view. The physician considers the matter from a humanitarian standpoint, but the veterinarian from force of circumstance is compelled to regard it as an economist. If we look at the subject as a humanitarian or from the standpoint of the physician, we are in duty bound to exhaust all our powers in

* Read before the Ohio State Veterinary Medical Association, Columbus, Jan. 1910.

order to protect human life, while, on the other hand, as veterinarians, we are compelled to depend more on conditions of economy and retain the sympathy of those whose financial interests are more directly at stake. If we are pessimistic we may think a plague is upon us, as we are reminded by history that the disease has existed since the earliest times. We may believe in forward nation or with the elected, "We will be damned if we do, or we will be damned if we don't," or accept the Darwinian theory the survival of the strongest" as nature's way of checking too rapid an increase of population. We may be optimistic and believe in therapeutic evolution and even perceive the dawn of some preventive or cure by some such means as the "cellular theory of immunity," leucocytosis, phagocytosis, opsonins, opsonic therapy, toxins, antitoxins, enzymes, or some other imes yet to be discovered.

It is supposed that about one-twelfth of human tuberculosis is due to intestinal infection and about one-half of human intestinal tuberculosis is due to animal origin; it follows, therefore, that about one-twenty-fourth of human tuberculosis is due to bovine infection. Less than five per cent., then, of human tuberculosis can be credited to the account of the dairyman. Now, assuming this to be a fact, we cannot entirely excuse the dairyman's responsibility, but it is very unreasonable to have laws or rulings that compel the destruction of all cattle that react to a single tuberculin test and with no equivalent for the loss. The State of West Virginia last year had appropriated but three thousand dollars to indemnify owners of all the live-stock condemned from the various diseases throughout the state. It would have been a very arduous task for our authorities to have stamped out the two recent outbreaks of foot-and-mouth disease in this country if the state and government had not come to the rescue, by the government paying two-thirds and the state one-third of the valuation of the animal.

The United States Department of Agriculture through the Bureau of Animal Industry is doing a great service to the coun-

try. Through its civil service system our meat supply is becoming more wholesome. The tabulated facts collected by this department concerning conditions in the country are important and necessary factors, before we can expect any degree of success in the eradication of tuberculosis. This department with its many scientific investigators and some twenty-five hundred inspectors is developing statistics that are of great importance in order to deal intelligently with the disease. But owing to its present laws in its relation to the application of tuberculin, which requires the destruction of all cattle that react to a single test, its usefulness in that direction can be but little utilized. A single tuberculin test is not sufficient or accurate to warrant the destruction of all animals that show a reaction. Statistics from the department show us that the action of tuberculin can be relied upon in about 97 per cent. of cases. The bacillus of tuberculosis is supposed to require an indefinite incubative period of from eight to fifty days. If an animal was infected, and a tuberculin test was made within fifty days afterward, we could not depend upon the result. Suppose a number of animals were infected about the same time, or a number of calves from taking infected milk, which is quite possible, and the test applied within the limits of the incubative period, the results from the test would not be definite. It is recognized that old or encapsulated cases of tuberculosis will not react to the test and these may break down later and reinfect the system. If an inferior make of tuberculin was used the test would be still less accurate. The department furnishes tuberculin and tests herds free, provided the owner will qualify himself to destroy all animals that react to the test. This is where we are at, and this is the stumbling block that is in the way. If wealthy, ambitious owners of pure bred stock oppose the execution of this law, what should be expected from a poor dairyman. Within the last year, to my personal knowledge, a multi-millionaire owner of imported thoroughbred dairy cattle, after having them tested by the Department and getting two reactors out of some fifty head, refused to destroy them without a second reaction. It may be thought to

be an easy matter to apply this law. But there is something radically wrong with the system.

Tuberculin is misused and misapplied in various ways. For instance, we have laws of interstate commerce in about thirty-three different states governing the transportation of tubercular cattle. These laws in general require that all cattle shipped from one state into another for dairy or breeding purposes should be treated with tuberculin just before or just after entering the state. This necessitates considerable trouble and expense, and no doubt would be justifiable if the results were equal to the means; but as we have seen previously, when a good quality of tuberculin is used, about three per cent. or three cattle out of every hundred are lacking accurate diagnosis. Tuberculin can be procured of various manufacturers and the cattle can be easily immunized previous to the test being made so no reactors could be expected. Suppose a correct test to have been made and the healthy animals removed, the reactors that remain are allowed to be sold and resold and find their way into some dairy, and that locality becomes a localized centre for the distribution of the disease. Then the healthy cattle, after being shipped into one of the thirty-three restricted states are sold as the law reads "without restriction," and go into non-tested herds and are exposed to infection just the same as they were previously to being tested. If the cattle are shipped before being tested, what is the method employed and the result? The law of Pennsylvania passed some thirteen years ago, or in 1897, is as follows: In place of an inspection outside of Pennsylvania as provided above, dairy cows and such other cattle as are for breeding purposes may be examined and tested with tuberculin at suitable stock-yards nearest to the state lines on the railroad over which they are shipped. Such examinations are to be made by inspectors approved by the State Sanitary Board and at the expense of the owners of the cattle. If this law was enforced, would its utility be practicable? Without hesitation we say no, because there are numerous ways of evading it. Within the past year a shipper of dairy cattle who usually shipped in the vicinity of

Philadelphia, stated to me that he had them tested over there for five dollars a carload, and when asked what became of the reactors, said that he did not have one out of twenty-two hundred. Is it possible for dairy cows bought here and there over the country in carload lots to be entirely free from tuberculosis? There are other ways of evading the interstate commerce laws; for instance, in some states the inspector is required only to make affidavit that he used the test and took the temperatures as required by the test record. The chart or test record is signed by the inspector who takes oath to the affidavit; little is stated concerning his qualifications except that he is able to sign his name Doctor So-and-So, V.S. There is no penalty whatever for the misuse of tuberculin. I was informed by a veterinarian in the State of Ohio, when approached by a shipper concerning the testing of a carload of dairy cattle, that he was told that he could get them tested in Pennsylvania for twenty-five cents a head. In answer as to how it was done, he stated that one man went along with a syringe and another followed with a thermometer, and the work was all over in five minutes. It is therefore a matter easily determined how our present laws of compulsory slaughter and interstate commerce, allowing the misuse and abuse of tuberculin, are ineffectual; the one requiring all reactors to be destroyed, while the other allows them to go free. An extract from the pen of my old college friend, Dr. O. E. Dyson, formerly chief of the Chicago division of the B. A. I., is quite illustrative of the point I wish to make. "While it is true that various states have enacted laws intended to prevent tuberculous cattle from being shipped into them, these laws have positively served little or no practical purpose, simply for the reason that they are easily evaded. Furthermore, there seems to be no law which would tend to prevent the sale of diseased animals as healthy stock within the state. Consequently the purchaser is afforded absolutely no protection against the deception usually practiced by breeders of and dealers in tuberculous cattle, who can easily evade the laws as they now stand.

The purpose of all laws should be for the protection of man-

kind against any and all designing malefactors. Such, however, is not the case with any state or federal law dealing with the question of tuberculosis in cattle. In fact, the reverse is true. As matters now stand, tuberculosis in the herd of an honest breeder or dairyman is easily detected, and when this is done, the owner is held responsible and prevented from disposing of diseased animals as healthy. On the other hand, the malefactor is without question permitted to practice his deception and prey upon the public at large without the slightest restraint; this being accomplished as a result of his knowledge of the efficacy of the tuberculin test as a diagnostic agent, and to the fact that a diseased animal after having reacted to the initial test will generally fail to react to a second test for a varying period ranging from one to several weeks or months. As a result of this knowledge, it is an easy matter for the unscrupulous owner to defeat the object and purpose of existing laws in addition to swindling the purchaser by "doping" his cattle with tuberculin previous to submitting them to the buyer's test. Such acts are common and generally practiced by the breeders of diseased cattle much to the detriment of the live-stock interests to-day.

In a relative way let us consider for a moment conditions in other countries. The Canadian government supplies tuberculin to any reputable qualified veterinary surgeon, on conditions that he return a chart furnished by the department showing the results of the test.

In Denmark, the whole expense of the testing is born by the government provided the owner binds himself to follow sanitary rules, and keep the healthy animals safely isolated from those suffering from the disease. The veterinarian making the test is also obligated under penalty, to see that those conditions are carried out in the proper manner. In Denmark the government has entire control of tuberculin, while in the United States any manufacturer can dispense it. This is called the Bang system of Denmark. There are other systems or rather modifications of the Bang system as the Ostertag of Germany, and Dr. Nivan, of Manchester. But the Bang system is about the only one tried

with any success. This has been successful in Denmark and been tried with beneficial results in this country, but it is claimed that it will never become popular on account of our small and diversified dairys. A dairy composed of a dozen or twenty cows cannot afford to be divided up into two separate herds, two pastures and have two sets of attendants. The majority of our dairymen have broader opportunities and would leave the business instead. If we view the Bang system a little more closely for a moment, we find it has been tried since 1893, and only where the owners have been in sympathy with it, eradication has been successful.

According to this system the reactors are isolated or separated and never allowed to again mingle with the rest of the herd. All advanced or clinical cases and those found to excrete bacilli from the udder are destroyed, and the owners remunerated from one-third to five-sixth their market value.

Every six months the herd is tested again and the reactors separated, until the herd is free from tuberculosis. Calves are raised from reactors or infected cows, but are removed immediately after calving. Bang regards tuberculosis as a purely infectious disease. A calf may be infected before being born, but very rarely. Most calves are born healthy, even of tubercular cows, and will remain so if preserved from infection. Most reactors to the tuberculin test are but slightly affected and according to Bang there is no reason to destroy milk cows that do not show clinical or physical signs of the disease.

As a matter of history let us view some of the results. Beginning in 1892, Bang was able to demonstrate the practicability of his theories by changing a herd in which eighty per cent. of the milk cows reacted, and forty per cent. of the young cattle and calves; until in 1907 not one animal out of 211 reacted.

This herd is one that is now supplying Copenhagen with "superior milk, or milk for infants." Another herd which had seventy-four reactors out of 166, or forty-four and one-half per cent. in 1896, had increased to 274 head in 1908 and showed three reactors. In another herd in which eighty-two per cent. reacted in

1894, resulted in one calf slightly reacting out of 245 animals in 1908. Another herd had ninety per cent. of reactors in 1898 out of 286 animals and in 1907 out of 593 head two reacted slightly or one-third of one per cent.

Statistics of Denmark show the older the animal the larger the per cent. affected. Out of 40,000 cattle tested, calves run twelve per cent.; from six to eighteen months, twenty-seven per cent.; from eighteen to thirty months, thirty-eight per cent.; from two and one-half to five years, forty-four per cent., and over five years forty-eight per cent.

Those herds free from tuberculosis are found to live and be productive much longer.

Eradication in small herds has been found to be much easier and still more successful than in larger herds.

Professor Bang says "on 66 farms having 1,045 reactors out of 1,825, or 57 per cent., in 1905 had no reactors at the end of the test. The expense of the system is almost nothing to the cattle owner as the government pays the expense of the testing, but the co-operation of the owner is the most important factor."

The Bang system for the suppression of tuberculosis is probably the most economical and practical of any that has been tried. This system allows the owner of dairy cattle to make use of their own ideas and work out the problem of perfecting their herds largely themselves. This must be conceded among intelligent people before any degree of success will be allowed.

So far we have been dealing with the subject in a negative manner, but the crucial test depends upon a solution to the problem. The success of any system in this country will depend largely upon its popularity. It should antagonize as little as possible, be based upon practical ideas and appeal to the producer, as well as be beneficial to the consumer. It should be under government supervision similar to our meat inspection service, especially in so far as the use of tuberculin is concerned. Dairy animals could then be tested with more accuracy and records of the testing kept by the Department of Agriculture.

The most urgent reform at the present time is for the government to assume entire control of the distribution of tuberculin. Conditions would then be better for any system and the testing of cattle would begin on a sound basis. When the foundation is faulty the superstructure can never stand. Such a system would include the testing of animals about every six months for the first few tests, then afterwards perhaps once a year would be sufficient. Every diseased animal should be marked by cutting a knotch out of the ear at each reaction.

For convenience this mark should be in the form of a letter V and on the lower lobe of the ear following the first reaction. Subsequent reactions should be marked on the lower side of the ear. These knotches would show how many tests had been made and would designate an undoubtedly unsound animal and be visible at a glance. This would cause these animals to be handled as unsound, the same as blemished horses are to-day. It would develop an evolutionary process and cause their gradual elimination from the herd.

If a city or municipal government would adopt a system of this kind with government control of tuberculin, the purification of their herds would be revolutionized. Dairymen would feel personally responsible so long as there were any diseased animals in their herds, as they would be visible at all times and by anybody. This plan would develop a progressive system. The percentage of diseased animals allowed could be gradually reduced from year to year until the disease was entirely eradicated from each herd. This system would apply more directly to cities and communities than to the government as a whole, as our beef cattle are already largely taken care of by Federal inspection, but for progressive cities or towns that are wide awake to their opportunities, it could not be less than progress in the right direction.

In conclusion we must remember that tuberculosis has had its ups and downs, that the scientific world must become a unit, that our laws must be revised, and that we must "have the people with us."

TUBERCULOSIS.

AN ADVANCE COPY AND A RESOLUTION.

BY E. C. SCHROEDER, EXPERIMENT STATION, BETHESDA, MD.

AN ADVANCE COPY.

Among those who are interested in the relation of bovine tuberculosis to public health, it has been quite generally known that Dr. William H. Park, Director of the Research Laboratories of the Health Department of New York, and his associates, were making careful, systematic studies of the types of tubercle bacilli currently found in human tuberculous lesions. Hence, the announcement that Dr. Park would present a paper before the Pathological Section of the National Association for the Study and Prevention of Tuberculosis on May 3, 1910, entitled "Types of Tubercle Bacilli Found in Human Tuberculosis and Their Relative Significance," aroused widespread interest. It was sincerely believed by many tuberculosis investigators that we would obtain authoritative data which, even though they did not wholly solve the problem, would throw clear light on the percentage of human tuberculosis certainly chargeable to the bovine source of infection.

On May 2, 1910, I was given what purported to be an "Advance Copy" of the paper Dr. Park would present the following day. This advance copy was handed me by one of the registration attendants of the National Association for the Study and Prevention of Tuberculosis, and as far as I have been able to learn was prepared somewhere within the Association and was distributed by it as an authorized document. On first view the advance copy seemed to be typewritten; on closer inspection it

was found to be printed. As I wish to speak about it in detail, I will give its precise text, which follows:

Advance Copy.

Released for publication after 12 o'clock noon, May 3d, 1910.

Abstract of paper by Dr. William H. Park and Dr. Charles Krumwiede, of New York, on "Types of Tubercle Bacilli Found in Human Tuberculosis and Their Relative Importance," before the Pathological Section of the National Association for the Study and Prevention of Tuberculosis, Washington, D. C., May 3d, 9.30 A. M.

That only $2\frac{1}{2}$ per cent. of all tuberculosis in New York City comes from infected milk, butter, or meat, that is, from bovine sources, was the claim advanced by Dr. Park. This small percentage, moreover, is found mainly in children. In other words, pulmonary tuberculosis among adults is contracted solely from human beings, and is not the result of impure milk or food.

Dr. Park supported throughout his paper the contention advanced by Dr. Robert Koch, of Berlin, the discoverer of the tuberculosis germ, before the International Congress on Tuberculosis in Washington, 1908, when he stood practically alone in declaring that cattle did not transmit pulmonary tuberculosis to human beings. Dr. Park's conclusions show that out of 297 adults over 16 years of age examined in the research laboratories of the New York City Department of Health, only one showed tuberculosis of the bovine type, and that was simply a slight infection of the kidney. Two hundred and seventy-eight out of the 297 suffered from tuberculosis of the lungs in a fairly advanced stage, and of these not one showed a sign of bovine infection.

Out of 54 children between the ages of five and sixteen, 45 showed the human type of tuberculosis and only 9 the bovine, showing that even in this class the chief source of infection was from one human being to another, and that the danger from tuberculous milk or butter was comparatively slight.

Even in the cases under five, examined by Dr. Park and his assistants, out of 84 individuals, 62 showed the human type and 22 the bovine. Out of 40 fatal cases of infants, in 36 tuberculosis was of human origin and in only four from bovine sources. Out of a total of 436 tuberculous persons of all ages examined in only $2\frac{1}{2}$ per cent. was their disease due to infected bovine products.

The significance of these conclusions, it was pointed out, will be to direct all the energy of the campaign against tuberculosis to combating the spread of this disease among human beings, by preventing spitting, bad housing, overwork and other conditions bad for the health.

Dr. Park showed how the experiments had been carried on, and said that in only three instances was there any question as to the type of bacillus. He said, "We have seen no proof that the bovine type changes in man to the human type, or that the human type changes in calves of the bovine type."

Dr. Park was assisted in the preparation and presentation of his paper by Drs. Krumwiede, Anthony and Grund.

On May 3, after hearing the paper on which this advance copy is based and of which it claims to be an abstract, I went to Dr. Park and asked him how it happened that he did not draw the same conclusions in his paper that were given in the abstract of it, and then showed him the advance copy. Dr. Park looked at the purported advance copy and said that he had not seen it before, that he was without knowledge of its existence, that it was issued without his consent or authority and that it contained conclusions with which he did not agree. In plain language, in the presence of several witnesses, Dr. Park repudiated the advance copy of his paper, which was evidently distributed by the National Association for the Study and Prevention of Tuberculosis.

In the first paragraph of the repudiated, unauthorized advance copy the statement is made that "only $2\frac{1}{2}$ of all tuberculosis in New York City comes—from bovine sources."

If we read on we find the data on which this statement is based, so that it is a simple matter to use the data in the advance copy itself to construct a table which will show at a glance that the real danger to which public health is exposed through the use of food products from tuberculous cattle is nearly three times $2\frac{1}{2}$ per cent. (See Table I.)

TABLE I.

Table showing types of tubercle bacilli found by Doctors Park, Krumwiede, Anthony and Grund in cases of human tuberculosis in the City of New York, constructed from what purported to be an advance copy of Dr. Park's paper read on May 3, 1910 (before the Pathological Section of the National Association for the Study and Prevention of Tuberculosis.

Ages of Tuberculosis Individuals.	Human Types.	Bovine Types.	Percentage of Bovine Types.
Persons 16 years old and older.....	296	1	0.33%
Persons from 5 to 16 years old.....	45	9	16.66%
*Persons under 5 years old.....	62	22	26.19%
Total	403	32	7.12%

In the fourth paragraph of the advance copy the statement is repeated that "only $2\frac{1}{2}$ per cent." of human tuberculosis is due to bovine infection. Just how this percentage is obtained is something of a mystery, because the advance copy itself shows that 435 cases of human tuberculosis were examined and that 32 of this number were found to be due to bovine types of tubercle bacilli, and 32 is 7.12 per cent., and not $2\frac{1}{2}$ per cent., of 435.

To show conclusively that the error is not due to mistakes made in recording the data in the advance copy that was ob-

* Includes 40 cases of fatal tuberculosis in infants, 4 cases, or 10%, of which were due to the bovine type of tubercle bacillus.

tained from Dr. Park and his associates, the two following tables are given, which explain themselves.

TABLE II.

Table showing the types of tubercle bacilli found by Doctors Park, Krumwiede, Anthony and Grund in cases of human tuberculosis in the City of New York, as reported by Dr. Park at the meeting on May 3, 1910, of the National Association for the Study and Prevention of Tuberculosis. (From notes taken during the presentation of Dr. Park's paper.)

Character of Tuberculous Disease.	Persons 16 Years Old or Older.		Persons 5 to 16 Years Old.		Persons Under 5 Years Old.*	
	Human Types.	Bovine Types.	Human Types.	Bovine Types.	Human Types.	Bovine Types.
Pulmonary	278	..	8	..	5	..
Cervical Adenitis.....	10	..	23	8	6	12
Generalized	2	..	1	..	13	5
Generalized with Meningitis ..	..	..	1	..	32	2
Bones and Joints.....	1	..	10	..	6	..
Abdominal	1	..	1	1	..	3

The total number of cases included in the above table is 429, of which 398 were found to be associated with the human type of tubercle bacillus and 31 with the bovine type; hence, of all the cases examined, 7.22 per cent. were found to be due to bovine tubercle bacilli.

The cases of tuberculosis recorded in the above table are the same as those recorded in Table No. III., with the addition of 17 cases not included in Table No. III.

TABLE III.

Table showing the types of tubercle bacilli found by Doctors Park, Krumwiede, Anthony and Grund in cases of human tuberculosis in the City of New York, as reported in the *Bulletin of*

* Includes 40 cases of fatal tuberculosis in infants, 4 cases or 10% of which were due to the bovine type of tubercle bacilli.

the Johns Hopkins Hospital, Vol. XXI., No. 229, Baltimore, Md., April, 1910.

Character of Tuberculous Disease.	Persons 16 Years Old or Older.		Persons 5 to 16 Years Old.		Persons Under 5 Years Old.*	
	Human Types.	Bovine Types.	Human Types.	Bovine Types.	Human Types.	Bovine Types.
Pulmonary	277	..	8	..	5	..
Cervical Adenitis.....	9	..	19	7	5	11
Generalized	2	..	1	..	13	5
Generalized with Meningitis ..	..	..	1	..	31	1
Bones and Joints.....	1	..	10	..	6	..
Abdominal .....	..	..	..	..	..	..

The total number of cases included in the above table is 412, of which 388 were found to be associated with the human type of tubercle bacillus and 24 with the bovine type; hence, of all the cases examined, 5.82 per cent. were found to be due to bovine tubercle bacilli.

Dr. Welch, of Johns Hopkins University, called attention to the fact that the cases of tuberculosis examined by Dr. Park and his associates were not cases specially picked to show that bovine types of tubercle bacilli may cause human tuberculosis.

The tables show that the percentage of human tuberculosis due to the bovine source of infection is much larger than most conservative estimates warranted us to believe, and the following discussion of a paper read by Dr. Theobald Smith, at the same meeting of the National Association for the Study and Prevention of Tuberculosis at which Dr. Park read his paper, indicates that we cannot say with certainty that the full danger to which public health is exposed through the use of food products from tuberculous cattle is shown by the high percentage derivable from the work of Dr. Park and his associates.

In discussing Dr. Smith's paper, which dealt with the reaction curve obtained by growing tubercle bacilli in glycerine-bouillon, Dr. Park said that "10 per cent. of the cultures of

* Includes 40 cases of fatal tuberculosis in infants, 4 cases or 10% of which were due to the bovine type of tubercle bacillus.

tubercle bacilli he classified as human types in his paper gave the bovine reaction curve in glycerine-bouillon." To explain this phenomenon, Dr. Smith said that "the ten per cent. of cultures in question may represent aberrant forms of bovine tubercle bacilli that have been altered by retention in the human system."

I presume that we must not lay too much stress on the extemporaneous remarks made by investigators when they are discussing technical questions which have been unexpectedly brought to their attention, otherwise Dr. Smith's explanation should lead us to conclude that he now believes in the transformability of tubercle bacilli through the influence of environment from one type to another type. Apart from this, however, since Dr. Smith continues to give the reaction curve in glycerine-bouillon great importance as a means for distinguishing between human and bovine types of tubercle bacilli, we should not overlook the statement made by Dr. Park, or dismiss it lightly as having no special significance, because, if ten per cent. of the tubercle bacilli classified by him as human types showed the bovine reaction curve, and, as he also stated, all the cultures classified as bovine showed the bovine reaction curve, we have the right to draw one of two conclusions, as follows: Either Dr. Park used special care to keep the percentage of cultures classified as bovine types down as low as he reasonably could, or he found a larger percentage of types of tubercle bacilli that should be classified as intermediate or transition forms than his paper shows.

The three tables which have presented, remember, show, though less than one per cent. of tuberculosis among adults is associated with bovine types of tubercle bacilli, that more than one-quarter of all tuberculosis among children under five years must be charged to the bovine source of infection; hence, if we accept the evidence various investigators have supplied to prove that tubercle bacilli are not constant in their types and virulence, and bring this to bear on the 10 per cent. of tubercle cultures from human tuberculosis which Dr. Park classified as human

types, notwithstanding that they gave the bovine reaction curve, and keep in mind that the percentage of perfect bovine types of tubercle bacilli found in human tuberculous lesions decreases directly as the ages of the infected persons increases, we have the right to pronounce an indictment against raw milk from tuberculous cows which stamps it as a serious disease producing agent.

Let us now turn to the fifth paragraph in the advance copy, which directs how and where "all the energy of the campaign against tuberculosis" shall be expended, and which absolutely ignores the bovine source of infection for children as well as for adults.

I specially brought this paragraph to Dr. Park's attention and he specifically denied its conformity with his views. Compare the repudiated paragraph with the following, which is copied verbatim from the résumé in the *Bulletin of the Johns Hopkins Hospital*, which supplied the data for Table III.

"In infants and young children, however, bovine infection causes many deaths and deserves that we give serious consideration to its prevention. This can best be done by safeguarding the milk and butter supply of young children."

This quotation, I have reasons to believe, expresses the conclusion from Dr. Park's work which he is willing and prepared to indorse.

The spurious paragraph under discussion was widely published in the daily newspapers and also appeared, only slightly altered, in the *Survey*, a journal devoted to social, charitable and civic matters, on May 14, 1910.

A RESOLUTION.

During the last meeting of the National Association for the Study and Prevention of Tuberculosis six resolutions relative to the pasteurization of milk were indorsed. About the first five of the resolutions I don't care to say anything, but the sixth, because it seems to have been shaped by the same elements that gave the advance copy its objectionable character, requires a little attention.

The resolution reads as follows:

Resolved, That in the opinion of this association it has been proven, apparently, that a small percentage of the cases of non-pulmonary human tuberculosis, especially tuberculosis of the lymph nodes in children under five years of age, is due to infection by tubercle bacilli of bovine origin.

I would like to know what the object of the word "apparently," following the words "it has been proven," is. Is the National Association for the Study and Prevention of Tuberculosis ignorant of the work done by the German Imperial Tuberculosis Commission, the British Commission on Human and Animal Tuberculosis and numerous responsible and widely recognized independent investigators? Is the word "apparently" either reasonable or serviceable excepting it is designedly used to divert attention from one important and absolutely proven source of tuberculosis, the source most easily controlled? Is the life and health of one-quarter of the children under five years who contract tuberculosis of so little consequence that the cause of their death and disease can be dismissed with the word "apparently?" Or is the Great National Tuberculosis Association of this country taking the position that bovine types of tubercle bacilli in human tuberculous lesions show nothing conclusive? Are we to be asked shortly to believe that human types of tubercle bacilli can be converted into bovine types in human tissues, especially in the tissues of children?

Let us not forget that honesty, even in a tuberculosis campaign, is a principle we cannot afford to ignore.

THE VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY will hold its semi-annual meeting in Newark July 14th and 15th, with headquarters at the Achtel-Stella, 842 Broad street, where the first day will be devoted to the usual routine business and papers. On the second day (July 15th) a clinic will be held at Dr. Runge's hospital, 130 Union street. The latch-string is always outside to veterinarians from the neighboring states who are always sure of a hearty welcome.

SURGERY AND THE COUNTRY PRACTITIONER.*

BY C. G. GLENBERG, CLINTON, ILL.

When our president and secretary both wrote me and said that it was up to me to furnish some part of the program for this meeting, I assure you I did not want to, for I had nothing of interest to bring you. After I had notified the secretary that I would try and had given him my subject, I found that I had undertaken a task far greater than I intended. However, I will do the best I can and I will treat the subject in a general way, so if I do not suggest anything new, I can at least present my views on a subject that comes close home to every country practitioner.

Surgery means a healing of disease or injury by manual operation. These days when we mention surgery, the knife and blood are suggested, even though we know what Webster's definition is.

Considering surgery from every standpoint of the present scientific methods, its true definition must be, "The manipulating and adjusting, the applying to, or taking away, from the body that which tends to produce a state of health."

You can notice at once that such a definition calls for certain special qualifications in the make-up of a surgeon. I have classified them as follows:

First, Natural Talents; second Acquired Talent; third, Material Equipment; fourth, Common Sense.

The first principle required to produce a successful surgeon is his natural born talents, such as the steady nerve, inventive genius, accurate calculation, quick perception, delicate touch, and

*Read before the December meeting of the Illinois Veterinary Medical Association.

the agile movement of the fingers. These qualities we do not all possess, and they cannot be acquired, though they may be somewhat developed and improved by practice.

The second principle is acquired talent. No person gifted with a perfect natural surgical talent can succeed without a thorough knowledge of the science of surgery. It is true his natural talent may enable him to accomplish some wonderful stunts, but without the knowledge acquired through the study of the science, he is groping in the dark. What constitutes the acquired talent? We might call it the mental equipment. It is not only necessary for the surgeon to have all the knowledge that goes to make a good general practitioner, but he must have some special training. It is essential that he be a thorough anatomist, both theoretically and practically. And in morbid anatomy to be able to recognize the cause, progress, and final termination. Asepsis and antisepsis must be thoroughly comprehended. He must be an adept with the use of anæsthetics, and also have the practical experience which is the only thing that will furnish him the power to skillfully manipulate all the essential material equipment that goes to make up the modern surgeon's outfit.

The third principle is the material equipment, which includes all the agencies discovered and invented by modern skill and science, to assist us in handling our patients, manipulating the delicate structures and protecting them from the ravages of infectious bacteria. No surgeon with abundance of natural and acquired talent can hope to succeed without a supply of the best surgical instruments and appliances obtainable.

The fourth principle is common sense. It is the qualifying element. It is that quality of our being that causes us to handle our patients in a practical and careful way. It prevents us from being carried to extremes by scientific theorists, or lowering ourselves to the methods of the barnyard surgeon. Have you ever lost your patient, your customer and confidence in yourself by failing to exercise your common sense? I have.

Common sense keeps us from being too nice or too nasty in operating. Let me illustrate. I saw a young graduate trying

to disinfect and shave the spot on a horse where he expected to insert the trocar, when the animal was wild with pain and dangerous to be around and in danger of dying from the distention of gas. Too nice. Common sense is the balance wheel of all our powers, and must be the constant companion of every successful surgeon.

All that I have said applies to both the city and country surgeon. These qualities enumerated are essential to make a perfect surgeon. Unfortunately a very small per cent. of us are perfect especially in the natural qualifications. And another small per cent. of us are totally void of natural surgical talents.

You see how this subject leads to specialization in our work to obtain the greatest degree of success. I am going to leave the specialist out for the present and deal with the great common mass which I think will take in ninety per cent. of us.

But let me say here that I fully believe that the specialist in veterinary surgery will find a greater field for his labor as the standard of veterinary education advances.

We as surgeons may be excusable for some lack of natural talents, but the perfect mental and material equipment is within the possibility of all, and I think should be required of us before we set up as qualified surgeons. How can we who are not specialists make the greatest success in surgery? Can we in the country be as nice and scientific with our operations as we have been taught in college? Can we in the barnyard with the wind blowing the dust and dirt in all directions, and our assistance limited, expect to successfully perform operations that tax the ingenuity and skill of the city veterinarian who is favored with all the conveniences of a modern hospital? To be successful in our surgery is very essential to us as country practitioners. It is not only the most remunerative branch of our work, but by it we can easily demonstrate our ability compared with that of the non-graduate. And we can just as easily bring ourselves into disrepute. We may administer medicine in the treatment of disease that will cause the death of our patient without exciting the suspicion of our client. The many mishaps and unfortunate

results that often naturally follow surgical operations are usually charged up to the surgeon. You will be cited to the fact that Farmer Jones years ago performed that same operation successfully, with nothing but a jack-knife, darning needle and waxed thread. I think the time has come when we as professional men, educated veterinarians, should not practise surgery in the barnyard, as we have done in the past.

Occasionally we may have conditions favorable in the country yard, where we can perform the operation in a thoroughly aseptic manner. We will then leave the patient in the care of some person who knows nothing of the laws of cleanliness, and the result of our surgical feat proves a failure. The same case kept under the care of a competent person the results would have been quite different. It is true we are told of some marvelous operations successfully performed by some man who knows nothing of bacteria or disinfectants, and cares less. They forget to tell us of the many funerals that have followed in the wake of that same man's surgical career.

We as professional men cannot afford to take the risk. They will forget about our wonderful stunts and advertise our funerals. They are justifiable in expecting more of us. It is right that they should, for we are not excusable if we have neglected the least essential precaution. There are a great many minor operations that can be performed just as easily one place as another. There are a few major operations that have to be performed immediately and on the spot where the animal is found. In such cases we have to take the risk, and do the best we can. A majority of the surgical cases can be brought to us and left for the after treatment. I am fully convinced that every veterinarian who professes to be a surgeon should have as part of his equipment a well lighted sanitary operating room, furnished with a table that can handle his patients with safety, and with satisfaction to himself. The expense of such an outfit can be brought within the reach of every practitioner even in the smaller towns.

The reputation such a place will give will return more than its cost in a very few years, saying nothing of the time and en-

ergy saved and the quality of work you will be able to do. The time is already here when the surgeon not so equipped cannot hope to compete with his neighbor who is. Though the animal may be taken home for the after treatment, it pays to have your patient during the operation where you can do the work with credit to the profession and with comfort and satisfaction to yourself. It will take but little education to teach the farmer that it is economy to pay a few dollars more and leave the patient for after treatment, thus adding to your record as a surgeon as well as to your financial gain.

It is not my purpose to discuss methods at this time. I want in a general way to present some of the essentials in all operations. In many cases the ingenuity of the surgeon is taxed to the limit. So many cases presented to us in just a little different form than we have ever heard described. Proper diagnosis is very important at this point. If we know exactly what we have, the operation is simplified; but if we are guessing we are almost sure to come to grief before we get through. Before deciding on an operation our examination should be thorough. If the case is one that you cannot fully decide on its true condition, consultation should be requested. It may be impossible to secure competent consultation, so it is up to us to devise methods of our own. It may be that our reputation in that neighborhood hangs on the issue of that operation. I find it is a good policy to put most of the responsibility on the client in these critical cases. A full explanation of the nature and dangers of the case before operating, often saves the surgeon much embarrassment when the case reaches the real issue. I have found it quite agreeable to make a confident out of my client before entering on the critical operations.

It is some question in my mind how much experimenting we should do. It is not only our own reputation that is at stake, but that of the profession in general. If we through lack of experience make a failure with some operation that can be successfully performed, we leave the impression in that neighborhood that a graduate is no better than the old horse doctor. And it

takes some proof to overcome that impression. I believe the safe and better plan is to be neighborly and call in assistance on these critical cases. I believe if we as country practitioners would work together and have more consultations in our work it would result in profit in many ways to us and in many cases to the farmer. And it might not be out of place to call in a specialist to operate for us. The farmer gets the idea that there is something lacking in the veterinarian who calls in assistance. It is not so with the medical profession; they expect them to need help. And there is no reason why the veterinarians should not work together as do the M. Ds.

The use of anæsthetics in veterinary surgery, I believe, is the proper thing. Not only from a humane standpoint but as an assistance in doing better work. I do not think we should strap our poor dumb patients and torture them just because we can. I know it is difficult to secure a competent person in the country towns to administer the anæsthetic. I believe we should make our surgery important enough to pay for calling in our neighbor oftener than we do. I would not have us combine to rob the poor farmer, but I would have us combine in the interest of our patients, and put an end to much of the torture they have to endure at the hands of our profession.

Local anæsthetics can be used with good results in many cases at a nominal cost. They will bring great relief to the patient and quite an assistance to the operator.

Antiseptics and cleanliness are very important factors with the surgeon operating in the country. It is not enough to use an antiseptic, but we should know that the one we are using has the properties in sufficient strength to protect the wound from infectious bacteria. The absolute sterilization of everything intimately connected with the surgical operation is necessary. The hands of the operator are so often neglected after he has secured the patient. And when the farmer brings you water for cleansing purposes, nine out of ten will bring it in a slop bucket, and some will even try to force you to use the filthy bucket, as they

do not want to spoil a fifteen-cent milk pail with your horrible medicine.

If you must operate in the country, take time to give the farmer his first lesson in cleanliness. For if cleanliness is next to godliness in our personal lives, it is next to the most essential in promoting success in surgery.

Emergencies.—In making preparation for an operation the entire field of possible accidents should be considered. There are some things that we consider, but we do not expect them to happen. And there may be obscure conditions that will give us serious trouble. We may neglect to get ready for such accidents. You know the unexpected always happens when we have been careless with our preparation. It may do for a surgeon operating in the hospital to neglect some of these things, when he can have an assistant step to a case and be on hand in a few seconds with the required material. The surgeon operating in the country ten miles or more from the base of supplies has to be more careful. With all the care and forethought we then sometimes find ourselves handicapped in an operation for lack of some thing that has been left at the office.

Preparing the Physical Condition of Our Surgical Subjects.—While the preparation of the physical condition of our patients may not require as much attention as those of the human surgeon, there are some cases where a little precaution on our part along this line is very essential. A good healthy physique of our surgical patients presents a resisting power against bacteria that is very desirable and often more effectual than the antiseptic we may use. I know when we have made the trip to the country to perform some surgery and find the subject is not in the best of health, we are tempted to go ahead with the work and take the risk. I think the best policy is to charge our client with the trip and take time to put our patient in physical condition.

I will give you a little incident that happened in my experience which illustrates the need of physical preparation before operating. I went to the country to trephine for a fourth molar tooth in the superior maxillary of a four-year-old colt. I found

the animal was running on grass and was as fat as butter. I hesitated a little, but finally concluded he could stand the strain of the operation. I prepared for the work. Cast the animal and performed one of the neatest and quickest operations I have ever done. When my patient got on its feet I found it was perspiring very profusely and scarcely able to stand. We moved it to a shed, where he went down with a severe case of azoturia and died in twenty-four hours. Yes, preparation of the physical condition of our surgical patients is often of the most vital importance.

The preparation necessary will be accomplished through medicinal treatment, dieting, exercise or rest as the patient's condition demands. The thoughts presented in this rambling paper have been suggested to me by my own mistakes and those observed in others.

If I have started a thought in your mind that will bring out some discussion, or that will send you home to your field of labor with new inspiration and a determination to place the surgical part of our profession on a higher and advancing plane, I will be well repaid.

IN an account of the annual field day of the Louisiana Sugar Planters' Association at the State Experiment Station, June 9th, published in the New Orleans *Daily Picayune*, of June 10th, which it states was attended by more than 150 planters from all sections of Louisiana, Cuba and Hawaii, we note that an address was given by Dr. W. H. Dalrymple, on the eradication of the tick pest from the state. Dr. Dalrymple gave his hearers a number of statistical facts on money spent, and what it had accomplished, and expressed his hope that the legislature would see fit to make an appropriation so that the work could be properly carried on, and stated that Secretary Wilson had asked for an extra appropriation of \$100,000 to complete the work. He told the members of the association that 138,000 square miles in the United States was about the area immune from the tick. He also pointed with pride to the fact that Louisiana-raised cattle brought 40c. more than other cattle sold in Chicago some months ago, which was evidence that Louisiana can produce as fine a cattle as any state in the union.

DIAGNOSING GLANDERS AND TUBERCULOSIS IN TRANSIT.*

TUBERCULIN AND MALLEIN TESTING AT THE MINNESOTA TRANSFER BY THE BUREAU.

BY R. H. HARRISON, D.V.S., INSPECTOR, B. A. I., ST. PAUL, MINN.

Inspection was inaugurated by the Federal Government at the Minnesota Transfer, January 2, 1909, for the inspection and co-operative testing of animals shipped inter-state, and exported to Canada. This was done at the solicitation of the several states receiving animals shipped through the "transfer," where the several trunk lines distribute their freight to each other's lines, the "transfer" being the clearing house of the ten trunk lines which enter St. Paul and Minneapolis.

There had been inspection and testing at the transfer for several years by certain veterinarians of the Twin Cities, but, owing to the difficulties of adjusting the fees and the methods of handling the stock, as well as for other reasons, the shippers and emigrants complained so bitterly to the transfer company and to the state authorities that the management of the transfer company discontinued all inspection and testing at this station September 1, 1908. Then the state veterinarians, and the secretaries of the Live Stock Sanitary Boards got together and went to Washington and petitioned the Bureau to detail an inspector for the work necessary.

Arrangements were made with the transfer company and temporary quarters fitted up for the work. Testing has been done in cars, which were switched several times during the test.

*Presented at the Annual Meeting of the Minnesota State Veterinary Medical Association at St. Paul, Minn., Jan. 12, 1910.

and in open pens and alleys. Federal law governing the transportation of live stock shipped inter-state, declare the carrier, *i. e.*, the railroad company liable to a fine if they convey or carry animals which are affected with an infectious disease; therefore, to protect themselves, the railroad companies, as a rule, require the stock to be inspected before loading and a certificate given by the local veterinarian. This certificate by law should accompany the way-bill, the shipper should have a copy in his possession, and a copy should be forwarded to the state to which animals are consigned.

It would seem to be a good business proposition for the veterinarians in this state, as well as other states, to acquaint themselves with the several laws of the different states so that if called upon they may issue a proper certificate or test which will be accepted by the states to which animals are destined.

I feel sure you will all agree that it is unprofessional and unbusiness-like and dishonest to charge fees for inspection and testing when the state to which the shipment is consigned does not require it; and to test cattle for Montana shipments and have the emigrant delayed here for a mallein test for his horses which is required for their entry into Montana; also to give an emigrant a certificate of inspection and assure him that it will carry him to his destination, when the veterinarian should know that if a mallein or tuberculin test is required the shipment is held at this point for testing. Again the veterinarians should know that local or state certificates for inspection or testing are not accepted at the boundry for export shipments to Canada.

The Canadian government requires a mallein test for horses, either at the line, before they are allowed to enter, or a test must be made by a veterinary inspector of the B. A. I. or made by veterinarians in each state appointed by the United States Department of Agriculture B. A. I., and their chart must be endorsed by a B. A. I. inspector, also designated by the Bureau to so endorse it.

Also the Canadian Government does not require a tuberculin test for emigrants' cattle, except carload lots for sale, and

thoroughbred stock for sale. Bureau mallein is the only preparation recognized by the Canadian Government. These points are mentioned for the reason that we are constantly receiving mallein and tuberculin test certificates for inter-state and Canadian shipments, and Montana is the only state that requires a mallein test at the present time; and some states do not require a tuberculin test. It would seem to be a good business proposition for the veterinary profession in this and other states to send to the proper authorities and line up to find out what is required by the different states, and keep in touch with changes in the laws; for the emigrant surely deserves some consideration as he pays to have his stock inspected or tested and surely should be recompensed accordingly; so that it will not be necessary to hold him at the transfer or elsewhere to complete his inspection or test his stock as the law requires.

THE BUREAU METHOD OF TUBERCULIN AND MALLEIN TESTING AT THE TRANSFER.—The animals are unloaded from the cars and placed in the stable to remain during the test without being moved and as far as is possible this is done early in the morning so that they may get quieted before the test begins. Feeding and watering is done at regular times in the stable; no grain is fed, hay only being furnished; quiet is maintained and no dogs are allowed and as few visitors as possible are admitted. The test for both horses and cattle begins at 2 P. M., continues at 4 and 6 P. M.; the injection given at 8 P. M. and the first temperature is taken, ten hours after the injection, at 6 A. M. and continued every two hours until five tests have been made. If an elevation of temperature is found after the fifth test or at the twentieth hour, the procedure is continued hourly until the temperature is lowered.

DISPOSITION OF PASSED CATTLE, HORSES AND REACTORS.—The reacting cattle are condemned and are tagged in the left ear with a United States suspect tag with a serial number, and are turned over to the State Live Stock Board for disposal. The passed cattle are tagged in the upper edge of the right ear, at the junction of the inner and middle third, with a United States

Interstate tag, Bureau of Animal Industry, with a serial number. A certificate is furnished to accompany the way-bill and triplicate forms are issued, one for the shipper, one which is sent to the state veterinarian or the secretary of the Live Stock Sanitary Board as the case may be, and the original retained and forwarded to Washington.

Reacting horses, mules and asses are likewise turned over to the Live Stock Sanitary Board, and horses passed for inter-state shipment are certified to in the same manner as cattle. A notation is made giving the character and size of swelling, if any, occurring at point of injection. The form Q. D. 20 used in the certification of mallein tests for Canada, has been alluded to.

The cuti-teuberculin test of Von Pirquet and the ophthalmic test of Wolff-Eisner and Chalmette are shown on some certificates furnished, but are not as yet accepted as reliable by any state authorities or by the government.

The quantity or dose of tuberculin used is 2 c.c. for an adult, adding 1 c.c. for every 500 pounds over 900 pounds. Calves are given 1½ c.c. In using tuberculin the injection is made just in front of the shoulder or on the top of the neck; in old bulls, where the skin is the thinnest about the shoulder.

In mallein testing the skin of the neck is cleaned, the hair clipped, and a 5 per cent. solution of carbolic acid used to make aseptic; the side of the neck not covered by the mane is injected so the "point" of injection will show; consequent plainly, the "point" will not become infected by the debris from the mane.

WHAT IS CONSIDERED AS A REACTION IN CATTLE.—Dr. A. D. Melvin, Chief of the Bureau of Animal Industry, advises: "The febrile reaction in tuberculous cattle following the subcutaneous injection of tuberculin begins from 6 to 10 hours after the injection, reaches the maximum 9 to 15 hours after the injection, and returns to the normal 18 to 26 hours after injection. A rise of two or more degrees Fahrenheit above the maximum temperature observed on the previous day should be regarded as an indication of tuberculosis."

Dr. John R. Mohler, Chief of the Pathological Division of the Bureau, in his paper on "The Tuberculin Test of Cattle for Tuberculosis," gives these valuable suggestions.

Eliminate from the test those animals that show temperature preliminary to test, which may be caused by advanced pregnancy, excitement of oestrus, concurrent diseases as inflammation of lungs, intestines, udder or other parts, retention of placenta, indigestion, etc. Heat, ill-ventilated stables, exposure to draughts, or cold rains, changes in feeding, watering and stabling, during the test.

In after temperatures a reaction is shown by an elevation of 2° F. One that does not go above 103.8° F. is not considered a reactor but may be viewed with suspicion.

The temperature reaction shown should have the *characteristic rainbow curve*. Suspicious cases in testing with us are classed as reactors, as interstate animals cannot be held in quarantine for a re-test; very often a careful physical examination helps our diagnosis.

In animals which are suspected of having been tested before being shipped and which are not accompanied by certificate or chart, a double or triple dose of tuberculin is injected and the temperatures are taken sooner than in the regular test.

It may be of interest to note the reports of tuberculin testing made by the federal government, states and others, with tuberculin furnished by the Bureau of Animal Industry, show that from 1893 to 1908, fifteen years, that out of 24,784 reacting cattle slaughtered, lesions were found in 24,387; a percentage of 98.39.

In mallein testing a reaction is shown by an *elevation* of temperature, beginning at the eighth or tenth hour after injection, and a continued elevation from the tenth to the sixteenth hour—2 to 5 degrees. Two degrees is considered sufficient to condemn. The swelling at point of injection is characteristic in reactions and is described as hard, abrupt, and painful, from 4 to 10 inches in diameter with corded veins extending prin-

cipally downward; this swelling increases from 24 to 72 hours and disappears in from 3 to 9 days. Severe lameness is often shown, dragging of the foot on the side which has been injected.

In non-reactions, slight or no swelling follows the injection, especially when the neck has been cleaned, the hair clipped, and the skin made aseptic and the syringe and the needle are sterile.

We have tried several methods, but have had better results and less swelling by observing cleanliness and letting the swelling, if any, absolutely alone and cautioning owner to observe the same rule. We are cautioned by the bureau to give due consideration to testing horses affected with pneumonia, pulmonary emphysema, bronchitis, lymphadenitis, alveolar periostitis, caries of the teeth, and melanosis.

WHY TESTING AT THE TRANSFER IS MORE RELIABLE THAN WHEN PERFORMED BEFORE ANIMALS ARE SHIPPED.—*First*—Because it is done at regular stated intervals, the animals are kept as quiet as possible, and the testers can give their individual attention and time to the work.

Second—“*As there are no fees, honest work can be done?*”

Third—Animals showing too high a preliminary temperature are not injected.

Why the test should be more reliable and trustworthy when it is done at origin—temperature shown on preliminary test caused by “carring,” change of feed and water, strange stabling, can be avoided. We very often find the temperatures shown in the preliminary test higher than that which is exhibited after the injection.

It would seem obvious that a preliminary temperature of 103° or over, would give no insight to a reaction by the temperature after the injection, even if it was elevated to a considerable degree.

If the tales told by the emigrants and shippers are true, in the testing of their stock, it would not only make us ashamed of the veterinarians who make the test, but would make us very suspicious of all private testing: *e. g.*, fine cattle from an adjoining state, tested and certificate given, show a temperature

of 99° flat at three intervals the day before, and 99° flat at intervals five times afterwards—same signed by an assistant state veterinarian—and others as bad or worse.

I would give a note of warning to veterinarians, that it is essential for them to make honest tests, because there is no knowing whether or not a re-test will be applied by the authorities of the state receiving animals, and in the event of a reaction, it will simply discredit the practitioner in the eyes of the authorities not only of *his* state, but those of the state to which the shipment is made; and, in addition, will not only hurt himself but the rest of the profession, and discredit the best method known of detecting and stamping out this scourge of the animal race.

THE annual meeting of the Missouri Valley Veterinary Association will be held in Omaha, Neb., July 6 and 7, 1910.

The committee on local arrangements are busily engaged assisting the officers of the association in perfecting plans for a large meeting. A pathological exhibit of fresh specimens at the packing houses of South Omaha will be a feature this year which will take the place of the clinic. The chief of the local branch of the Bureau of Animal Industry, Dr. W. N. Neil, and a committee from the Inspectors' Association are aiding the committee on local arrangements in this part of the program.

The forenoon of the first day will be devoted to routine business and reports of committees. The committees are expected to give some valuable information, especially those committees on infectious diseases, meat and dairy inspection, together with the president's address. The pathological exhibit will occupy all of the afternoon of the first day and the annual banquet the evening.

The entire second day will be devoted to the presentation of papers, their discussions and reports of cases.

The association has close to 500 members, with over 90 applications on file in the office of the secretary.

THE MICHIGAN STATE BOARD OF VETERINARY EXAMINERS will hold its annual meeting at Lansing the second Tuesday in August.

A PRELIMINARY REPORT OF THE BACTERIAL FINDINGS IN CANINE DISTEMPER.

BY N. S. FERRY, M.D., RESEARCH DEPT., PARKE, DAVIS AND CO.,
DETROIT, MICH.

As this is merely a résumé of a paper which will soon appear, the history of the disease as well as a review of the literature will be reserved until later.

Canine distemper is a disease characterized according to the textbooks as one which generally attacks young animals, and runs its course as a catarrhal fever, affecting all the mucous membranes of the body and often accompanied with certain nervous symptoms and skin eruptions.

The etiology is still an open question. The number of different organisms found which were said to produce typical symptoms of distemper are nearly as numerous as the investigators working on the subject.

During the past two years it has been my privilege to study and autopsy nearly three hundred dogs suffering from an acute infection, the symptoms of which were characteristic of distemper. During that period I have arrived at some conclusions rather opposed to many found in the textbooks on diseases of the animal. These conclusions were drawn after watching the disease in many of the dogs from the time of exposure to death, in being able to post them at any stage of the disease, and obtaining cultures from all the discharges and mucous surfaces.

I was very fortunate in having at my command an almost continuous epidemic, so that the disease was seen in all ages, stages and forms. So numerous have been the organisms described as the causative agents of the disease, one is very reluctant to come forward championing another; but as the organism to

be described has been found by me so constantly, and in pure culture so consistently, I feel that this fact should be published, giving others the opportunity to confirm, if possible, the findings.

While studying the symptoms, I was often struck by the fact that, contrary to the teachings of most textbooks, all dogs suffering from the disease, whether of the respiratory, abdominal or nervous type, would at some stage of the infection show symptoms of respiratory trouble. This led me to study more closely the respiratory organs, and it was here I found the organism under discussion.

Taking the disease in the early stages, I was able in almost every case to isolate the organism uncontaminated from the smaller bronchi, and often the trachea. Later in the disease I could often isolate the organism from the smaller bronchi in pure culture, but from larger bronchi and trachea I would almost invariably get a contamination with one or more of the pus organisms. In the last stages the secondary or terminal infections would extend to the lungs, when it would then be more difficult and at times impossible to isolate the germs.

Whether this organism is the cause of distemper remains to be proved. Out of 93 autopsies where the organism was isolated, it was found in pure culture uncontaminated in 71 cases. In 15 cases it was isolated from the blood. In 12 cases the organism was found contaminated in the smaller bronchi with the staphylococcus. In 9 cases it was found associated with organisms other than the staphylococcus. In 2 cases where the organism was isolated the exact bacterial findings have been lost. In a few cases I have seen the organism in smears from the lungs, but was unable to isolate it or grow it.

The serum of dogs suffering with the disease has always given a positive agglutination with the organism in question, while normal dogs used as controls were invariably negative. Inoculating young animals with live cultures of this organism have produced in several instances a "symptom complex" similar to distemper. In fact I am positive I have experimentally produced the disease by artificial inoculation. With this or-

ganism a vaccine has been made, which has given favorable results.

As a result of my autopsy findings, I have come to the conclusion that the eye, nose, skin and nervous symptoms are the results of secondary infection, and that death in most cases is the result of these secondary invaders. If this be true, the vaccine will have little or no direct effect on them.

In looking over the literature on canine distemper, I have not been able to find a description of an organism similar to this one. The characteristic of the organism of Copeman, Galli-Valerio, Lignieres, Phisilix, Hewer and others do not correspond with the organism.

CULTURAL CHARACTERISTICS OF THE ORGANISM UNDER DISCUSSION.

Short, narrow bacillus, usually found single, but often in pairs.

In liquid media may be found at times in long chains or even filaments.

In bouillon culture grown directly from the dog, the organism may be found larger and more oval in form.

Does not take the ordinary stains as readily as most bacteria.

Stains best with Loeffler's methylene blue with characteristic appearance.

The organism is actively and progressively motile.

PLAIN AGAR STROKE.

Twenty-four hours at 37° C.—Moderate growth, filiform and slightly raised. Surface moist, glistening and smooth. Growth translucent and of sticky consistency. No odor as a rule.

Seventy-two hours—Growth does not tend to spread except near bottom of tube in contact with water of condensation. As growth ages it has a tendency to become slimy, but retains its other characteristics. Stale or musty odor at times.

PLAIN AGAR STAB.

Twenty-four hours at 37° C.—Filiform growth better near the surface. Surface growth moderate, raised and restricted.

Forty-eight hours—Growth retains form with surface spreading slightly.

Seven days—Surface growth tends to be restricted, although some stains spread gradually. Growth is slimy and smooth.

Thirty days—Characteristics not changed. Growth increased.

POTATO.

Twenty-four hours at 37° C.—Growth rather abundant. Surface uneven, raised, moist, glistening, and contoured. Consistency, sticky and of a light tan color. Decided odor of stale bread. Medium, slightly darkened.

Seventy-two hours—Surface of medium nearly covered with growth which has become slimy.

Forty-eight hours—Growth thicker, with tendency to spread. Color darker tan. Medium much darker.

LOEFFLER'S BLOOD SERUM.

Twenty-four hours at 37° C.—Growth is scanty, filiform, smooth, moist, glistening and nearly flat. No color. Medium not colored nor liquefied.

Forty-eight hours—Growth has increased slightly. Characteristics have remained the same.

Thirty days—No special change in growth. Medium browned but not liquefied. Water of condensation decidedly alkaline.

GELATIN STAB.

Twenty-four hours—Filiform growth which is best on top. Surface growth restricted. No liquefaction. Medium not changed.

Thirty days—Characteristics remain the same. No liquefaction.

NUTRIENT BROTH.

Twenty-four hours at 37° C.—No surface growth. Moderate clouding which is persistent. Compact sediment which is easily broken up on shaking. Odor rather stale.

Forty-eight hours—No surface growth. Clouding has increased. Decided stale odor.

Seventy-two hours—Cloudiness increased. Sediment rather viscid. Odor decidedly stale, which becomes putrefactive at times.

Three weeks—Sediment decidedly viscid.

KOCH'S BLOOD SERUM.

Twenty-four hours at 37° C.—Growth scanty, filiform, smooth, moist, glistening and slightly raised. Growth light tan color. Musty odor. Medium not colored not liquefied.

Forty-eight hours—Growth increased slightly but no other change.

Seventy-two hours—Medium not liquefied. Water of condensation decidedly alkaline.

Three weeks—No change.

LITMUS MILK.

Twenty-four hours at 37° C.—No change.

Seventy-two hours—First appearance of change. Upper half-inch of medium has taken a deeper blue color.

Five days—Blue color extending lower into tube.

Fourteen days—Color entirely disappearing from the bottom of the tube. Color at top deeper blue. Brownish, slimy sediment in bottom of the tube.

Three weeks—Some stains. The color will have entirely disappeared from most of the media.

MILK.

Twenty-four hours at 37° C.—No change.

Seventy-two days—No coagulation, no acid. Sediment started to form in bottom of tube.

Fourteen days—Color of media light tan. Becomes slightly translucent and clouded. Sediment is thick and slimy. Odor stale.

Dextrose bouillon, mannite bouillon, maltose bouillon, saccharose bouillon, lactose bouillon, glucose bouillon, grown in fermentation tube 7 days at 37° C. Media in open arm clouded. No visible growth in closed arm. No fermentation of gas. Media alkaline, not acid.

USCHINSKY'S SOLUTION.

Three weeks at 37° C.—No growth.

COHN'S SOLUTION.

Three weeks at 37° C.—No growth.

DENHAM'S SOLUTION.

Seven days at 37° C.—Fair growth, with sediment in bottom of tube. Test for indol negative.

COLONIES ON AGAR.

Twenty-four hours at 37° C.—Very small, round, sometimes not much larger than a pin point. Translucent and slightly raised.

Forty-eight hours—About size of a pin head. Round, convex, smooth, amorphous and translucent. Edge entire.

Seventy-two hours—Colony has grown larger, but characteristics about the same. Edge may have become undulate.

Seven days—Colony much thicker; grumose in centre. Edge undulate.

COLONIES ON GELATINE.

Similar to those on agar. Medium not liquefied.

BACTERINS AND VACCINES IN VETERINARY PRACTICE.*

BY DR. T. B. ROGERS, WOODBURY, N. J.

I believe in starting fair. I am here as a representative of a commercial house, but if you expect to hear from me any mention of that house's products you are mistaken. We do not do our business that way. We keep our science and our business separate. If we want to advertise our goods we do it through the usual and legitimate methods. I am not here to advertise or sell anything.

When I was asked to give this address, the idea came across me, in attending a great many veterinary meetings, that the biological side during the last few years has been very largely dwelt upon. You could shut your eyes and imagine you were attending a meeting of bacteriologists.

I want to say to you in the first place that it is time that the practitioner asserted himself, with all due respect to the laboratory man the practitioner is the court of last resort—I can say this with the more grace because I am connected with a large bacteriological laboratory. At a meeting of the Gloucester Co., N. J., Medical Society, Professor Hobart C. Hare, of Jefferson Medical College, Philadelphia, Pa., made the assertion "that the jury of last resort, in matters medical, was composed of practitioners," and there is much truth in the assertion. No matter what the laboratory findings, if they don't work out in practice. Will the laboratory men present pardon me if I spend a few minutes in classifying this class of remedies, for they fall readily into a useful classification.

We have then: 1st. *True Vaccines*: Attenuated cultures of living germs. *Examples*—Small-pox vaccine, anthrax vaccine.

* Presented at the January meeting of the Minnesota State Veterinary Medical Association.

2d. *The Bacterins*. Killed cultures of bacteria, the vaccines of Wright Bacterins. *Examples*—Staphylo-Bacterin, Strepto-Bacterin. It seems to me that a better nomenclature for these classes would be to call the first class, Bio-vaccines—Living vaccine, and the second Necro vaccines.

3d. *The Antitoxins*, whose function is to neutralize toxins elaborated by pathogenic germs; their name, too, is somewhat of a misnomer, as they probably have the other side action which tend to the improvement of the condition of the recipient. *Examples* Diphtheria Antitoxin, Tetanus Antitoxin. These agents produce a passive immunity, *i. e.*, they introduce into the blood foreign material which renders the host less susceptible to the poison of the germ products they antagonize. It is worthy of notice that the bacterins—killed cultures, produce active immunity, *i. e.*, they stimulate the cells and sera of the host, raise the opsonic index and at once increase the phagocytic power of the cells, the bactericidal power of the serum, and still further prepare the invading germs for destruction by the phagocytes.

4th. *The Toxins*. Poison products of the bacteria. *Examples*—Old tuberculin—mallein. At present the use of this class in veterinary practice is confined to purposes of diagnosis. They produce a three-fold action when injected into patients suffering from the invasion of their special germ: 1. A thermic reaction; elevation from a standing temperature. 2. A local reaction; a characteristic swelling at the point of injection. 3. A constitutional reaction; symptoms of illness, anorexia, horripilation, general malaise.

I have lately had some interesting experience regarding the polyvalency of certain sera.

Thus it has been shown that the canker of pigeons is amenable to treatment with diphtheria antitoxin, and that diphtheria antitoxin possesses immunizing power in equine influenza. It is also curative in certain cases of canine distemper. On the other hand a veterinarian having charge of a large Philadelphia stable who gives each new horse a dose of tetanus antitoxin, is assured that this antitoxin immunizes against the common disorders con-

tracted in shipping. And, au contraire, some letters recently came to my desk claiming that influenza antitoxin was useful in the treatment of tetanus.

I cannot explain these somewhat curious conditions. A medical man, at one time interne of a large charitable hospital informs me that during his term he treated his diphtheria cases with potassium chlorate, glycerin and tincture of iron, and his whooping cough cases with diphtheria antitoxin. He claims that the serum was both palliative and curative in whooping cough.

I should like to say a word with regard to some recent work being done by the Bureau of Animal Industry with regard to getting a standard for veterinary antitoxin. It is very desirable to have a standard for it, but I wish to call your attention to what I think is a mistake in what they wish to do in this regard. We have all of us for years been immunizing horses against tetanus with an antitoxin that would not probably reach more than fifty American units. In our laboratories we have used it for ten thousand cases and never had a case of tetanus. I have charge of the public service stables of New Jersey, every horse which receives an injury of any kind is given at once an immunizing dose of tetanus antitoxin.

A great many of those horses are in a tetanus district, and before that method was instituted many cases occurred. In the six years this method has been followed, we have never had a death from tetanus and we are giving a serum that did not read above fifty American units. Now if the Bureau is going to impose 1,500 units, it seems to me they are going to ask you to pay a great number of times for your protection, and I think the science in all your serum treatment is to get them so cheap that you can make them of universal use. We have a fixed policy wherever we get a wound or whenever we do a surgical operation. We give the antitoxin and put it in the bill, and I think the profession should go a little bit slow before accepting that arbitrary standard. To-day in Philadelphia we are trying to demonstrate experimentally in the horse (and it has never been done before) the amount of antitoxin that is needed to protect.

Another word I should like to say to you in passing. It has been a matter of regret to me to notice that in the East a great many agricultural experiment stations are establishing small laboratories, and a great many of those laboratories are not in veterinary charge, and in my country the results are bad. The other day I received a letter from a farmer stating that he bought 300 c.c. of our tuberculin from a druggist, and he was testing his own cattle, under instructions he had received from the University of Wisconsin, and disposing of those cattle as he thought fit; and he wanted to know how long the tuberculin would keep, whether the instructions received in Wisconsin were correct, and altogether he was in that frame of mind of every farmer who is his own horse doctor. I think when you can get a state laboratory under proper veterinary supervision, it is a good thing; but I think the profession should protest against the establishment of state laboratories under lay control where the veterinarian is crowded out. I am the veterinarian of the State Board of Health of New Jersey. I have no control over tuberculosis. We have a state tuberculosis commission, purely under lay control. It consists of a retired farmer who kills the cattle, the director of the State Experiment Station, and a retired M.D.; and it results in cattle shipped into the state being tested in such wise that the test is a farce.

With regard to the bacterins, they have come to stay, but I sometimes think that the bacterial therapy is in more danger from its friends than from its foes. A good consistent enemy, laying constantly on one's flank, like a staunch hound, is often a friend in disguise; he acts the part of Kipling's yellow dog Dingo. (You may remember that the kangaroo desired to be run after, and Dingo went on the job, chasing him until the kangaroo developed his marvelous hind legs and jumping agility.) Too good a friend, however, often gets into trouble by being too enthusiastic with new remedies; he often fails to distinguish between "post hoc" and "propter hoc."

The up-to-date veterinarian will use the staphylo, strepto, and pneumo bacterins, and will save many cases he would otherwise

lose, but he will fit the remedy to the case and will not condemn this branch of therapy because he fails occasionally to get results. Gentlemen, it is just as well to look the matter squarely in the face.

You may get two cases bacteriologically and clinically similar and, getting good results in one case, fail in the other. The thinking man will accept these results as the vagaries of an infant science, and not blame the method.

With regard to the use of stock vaccines, it has been shown that stock cultures of the gonococcus give better results than polyvalent preparations, and I see no good reason why stock cultures of polyvalent streptococci and staphylococci should not take the place of those made direct from the patient. The element of promptness and convenience comes in play here.

While on the subject of the treatment of fistulous withers and poll evil I can strongly recommend that you pack the cavities with a paste made by mixing solid chloride of iron, rye flour and water. A stiff yellow paste results which becomes darker with age and also thinner, sometimes requiring the addition of more flour. With time too some others develop, giving the mixture a "fruity" odor. Soft lamp wicking impregnated with this mixture is packed into the wound and left there for 48 hours. Usually the slough comes out with the packing, and the remedy does not injure living tissue. Finally, remember that the bacterins are the best and latest biological remedies in diseases where staphylococci and streptococci are in evidence. You can get results with them that are unattainable by other means, *but you will meet occasional failures*. It is not necessary to say that the educated veterinarian will not disown a remedy because he occasionally meets with a failure, the cause of which is beyond his ken.

DR. WILLIS L. BRENTON, second son of Dr. S. Brenton, the well-known veterinarian of Detroit, Michigan, was united in marriage to Miss Frances A. Hinks, of the same city, at her parents' home on Wednesday evening, June 15, 1910. After a wedding trip to Duluth, they will reside in Detroit, where he is associated in practice with his father.

DRAFT HORSE BREEDING IN AMERICA.*

By E. T. ROBBINS, B.S., M.S.A.

The breeding of draft horses is gradually assuming great importance in America. Stimulated by the appreciation of prices during the last ten years, the business is attracting the attention of the most skillful stockmen to a far greater extent than before the panic of the nineties. Prices for draft horses are now higher than they have ever been before and offer quick and sure returns. Horses of acceptable type are certain of a ready sale as soon as they reach a workable age. Nothing depends on performance further than that they pull true and move freely and straight, so the probability of satisfactory returns from every colt matured is greater than with any other class of horses. Furthermore, accidents are less likely to happen to draft colts than to those of more nervous temperament, so that while blemishes are less objectionable than on light horses, wire marks and similar disfigurements are also less common. A draft colt from sound parental stock has the best of chances to develop into a sound and unblemished horse.

That the business of producing draft horses is to become a permanent one in this country admits of no doubt. Auto-trucks promise but little competition. Simultaneously with their introduction, the number of draft horses in the United States has steadily increased and prices have mounted to loftier and loftier heights. The past season on the Chicago market four-year-old geldings weighing near a ton have sold up to \$400 and hardened horses of equal quality have brought \$100 more. Of course these prices have required unusually good individuals, but prices \$100 less look good and have been freely paid, with buyers complaining that there were not enough of these good kinds. When it is

*Read before the twenty-seventh annual meeting of the Illinois State Veterinary Medical Association.

considered that these same horses earned their board at farm work from the time they were three-year-olds and subsequently paid in work for part of their earlier keep before they finally left the farm, it is evident that they made money for their breeders. Still many failures have been registered in this business, principally because of the mistakes of inexperienced breeders.

Probably the most common of these mistakes is the failure to feed draft colts liberally enough to support the growth they should make. Many 1,300 and 1,400-pound horses are the offspring of ton stallions and big mares, but failed to attain the size of their parents because of insufficient nourishment. A draft colt attains fully half of its ultimate size during the first year of its life. This means that the colt which is to make a ton horse must weigh 1,000 to 1,200 pounds by the time it is twelve months old. The colt that is scantily fed the first year will grow somewhat longer than the well-fed colt, but it will never overcome the setback from early privations. One of the oldest commission men in Chicago, Col. John S. Cooper, recently remarked to me that he was satisfied the most common cause of deficient size in draft-bred horses was poor feeding during the first winter. It has been the experience of the British government that Shire horses in India quickly degenerated in size when subjected to the scanty pasturage of the East. On our own western ranges, in a few favored localities where grazing is the best and alfalfa hay is used to tide stock through the winter, horses have been grown to a ton in weight without a bite of grain; but in less favored localities, where feed is poorer, horses of the same stock mature at 1,300 to 1,400 pounds.

Liberal feeding of draft-bred colts is imperative and the sooner breeders recognize this and supply the feed to make big growth, the sooner will disappointments diminish in number. The idea that a colt should be maintained principally on rough feed so as to develop his digestive system has been advanced by many breeders as a reason for not pushing their colts. It seems more likely that heavy feeding on a nutritious ration would develop the digestive powers and adapt them most perfectly to the

heavy grain feeding that must be practiced with mature draft horses at hard work. Certain it is that the draft colt during its first year will use to advantage all the oats and bran it will clean up readily three times a day. When so fed and allowed free exercise it will build up the best of bone and feet and strong vital organs while hastening forward to large size and early maturity. The French are among the best feeders in the world and that is why two-year-old Percherons frequently crowd close to the ton mark. The most successful breeders of pure-bred horses in this country are those whose settled policy is to push their colts summer and winter from the start. They have found that the colts that show up well as foals are the most likely winners as yearlings, two-year-olds and older horses. There are mares and stallions in America that have been prize-winners every year from foalhood, and now at eight and ten years old are sound and clean as a hound's tooth.

Two things are especially menacing to the success of draft horse breeders—impotence in stallions and abortion in mares—and of the two, the latter is the more discouraging. A ready remedy which wonderfully increases the foal-getting powers of stallions has been found in common, everyday work. No draft stallion is too good to work and when he is put to daily use in the harness he gains vigor and vitality while keeping out of mischief and commanding regular feed and care. A stallion is not a bad animal to work and one that is so handled is far more sensible and easily handled at stud duties. With his system in good health from the active life throughout the year, his procreative powers are at the maximum. Percheron stallions do regular work in France and they cover twice the mares and are surer foal-getters there than here. Here is an example of what a working stallion can do. In 1907 the imported Percheron stallion Nicolas, owned in Madison Co., Nebraska, made 199 services, which, by the use of the impregnator, mated 262 mares and resulted in 213 foals. He is a horse weighing 2,225 pounds fat, and 1,925 in hard working condition. He works on the farm every day. Other examples might be adduced to show the benefit from working draft stallions.

A more puzzling proposition from a breeder's standpoint is abortion. With all that veterinarians have found out about this trouble and all the preventive medicines that have been recommended, it continues to make tremendous inroads on the prospective foal crop from draft mares. Contagious abortion may be responsible for some of the blighted hopes of draft horse breeders, but most of the premature delivery of foals seems to be independent of any infection. Some breeders reported last spring that they lost all their foals, and every spring pitiful reports of losses from this source tell of the uncertainty attending efforts to get a crop of foals. Preventive medicines are useless in many cases because of the suddenness of the mishap and even when they are used they are frequently of no apparent benefit. Something more efficient than anything yet known is needed by breeders, for aside from the cases where treatment is not begun in time, there are still numerous instances where it seems to be of no avail.

The experience of breeders seems to point to more benefit from proper care of draft mares than from medicines. Probably in inexperienced hands as much damage is done by medicines as would occur without their use. Medicine for a pregnant mare must be given with the best of knowledge of its effect and its proper use. Proper care of the mare should be a simpler matter, provided the best kind of care is known. Unfortunately there is some doubt about this and abortions occur under all conditions.

The best of success in the long run seems to come to those who make a practice of working their in-foal draft mares. Mares that work every day are more certain to receive regular exercise and feed and care than if they are treated in any other way, but they must be worked by careful drivers or else foals will be lost by strains from handling heavy loads or working in the mud. Fortunately in early winter, when mares due to foal in the spring must be handled most carefully, the roads throughout the corn belt are comparatively good and the work is such that horses can be loaded within their capacity. Working mares keep their systems in the best of tone and their muscles strong and tense, and this not only helps them to foal with ease but favors the normal carrying of the foetus.

Idle mares that are kept in the stable under the mistaken idea that they are too precious to be allowed the risk of exercise are the greatest nuisances of all. Those that run in the pasture every day, or even day and night, apparently do themselves injury from excessive violent exercise, often over slippery ground, whenever the impulse to run and frolic possesses them. Draft mares seem to be more subject to injury in this way than light mares and steady moderate work in the collar is the best way to prevent it. It is a common experience of breeders to have mares that worked through the winter carry a larger proportion of foals the full time than those that were idle.

But not all mares can be worked through the winter on farms where the bulk of the summer's crop is put in and tended with brood mares. At the present time breeders are more in need of advice as to a successful way to handle their mares to prevent abortion than of any other thing pertaining to their business. Veterinarians need to know more about the trouble than is now known in order to give workable advice. A united effort to trace the causes of abortion and to discover ways of fortifying the draft mare against them should be productive of much additional light on this perplexing question.

During the season just passed an unprecedented number of draft mares and stallions have been distributed among the farms of the United States. There has been a widespread movement toward the better class of draft breeding stock. Many men are now in the possession of their first registered draft horses and are likely to lose a large proportion of foals from mistaken efforts at kindness to their mares. But the American farmer is surely destined to become in time a great breeder of draft horses. No other result can logically follow from the vast number of pedigreed mares recently taken to farms. From an importing nation we will become a draft horse producing nation. A timely attention to this growing business suggests that especial study be given to the conditions affecting the health and breeding powers of draft stallions and mares.

THE VETERINARIAN AND THE MORAL LIFE. .

AN ADDRESS BEFORE THE GRADUATING CLASS OF THE CHICAGO VETERINARY COLLEGE, TUESDAY, APRIL 5, 1910. BY REV. JOHN BALCOM SHAW, D.D., L.L.D., PASTOR, SECOND PRESBYTERIAN CHURCH, CHICAGO, WITH AN INTRODUCTORY NOTE BY D. ARTHUR HUGHES, Ph.D., D.V.M.

Only the other day I read in one of our papers the report of a conversation between a man and his wife that ran something like this:

"Dear, do you remember the night I proposed to you?"

"Indeed I do. How could I ever forget that?"

"And do you recall that after I proposed you sat a whole hour and never said a word?"

"I do."

"Well, dear, that was the happiest hour in all my life."

To-day, gentlemen, I have no doubt that for many of you, if not for all, this is a peculiarly happy night. Especially for those, if there be such, who are just getting through by a close shave. They are like the little girl, perhaps, who, when the conductor, not knowing whether he should collect a fare or not, asked her how old she was, replied, "I'll pay my fare and keep my statistics to myself." They will take their diploma and say nothing about grades. I congratulate them. I congratulate you all. It is a fine thing to be done with your work and step out into the active work of your profession.

I congratulate the world, too, upon receiving so many professional veterinary surgeons to-night. An old farmer in New England fell desperately sick and, despairing of his life, his family urged him to send for a physician. "No," said the old man, "I want to die a *natural* death." How many animals will fail to die a natural death when you all get down to work, and it will be a good thing.

And, still again, I offer my congratulations to the school from whose classrooms you now go forth. If I may judge from your appearance, and from a few of your number whom I have come to know and admire, you will do your alma mater no dishonor out in the world, but in many centers of the country pursue your work to her credit and honor.

Having spoken this word of cordial congratulation, let me now give utterance to a word of counsel. Coleridge once asked Sidney Smith if he had ever heard him preach, and quick came the answer: "Coleridge, I never heard you do anything else." Who could expect a preacher to talk to a graduating class without doing a little preaching? Here it is then and in few words:

I. Do what you can, young gentlemen, when out in the world, to exalt your profession. It has not been long regarded as such. Others have in recent years lifted it to a new level. Keep it there. Nay, lift it still higher. To accomplish this, you must always do honest work. Be self-respecting. Keep yourselves clean. Command the confidence of the people with whom you deal. Have the highest ideals for your personal life and for your profession. Throw your best effort into your work, and show men that it is not a trade but a science.

II. Undertake to serve the community in which you settle. Everybody needs a side interest to keep his life fresh and wholesome and well-balanced. No better pursuit could you adopt outside your profession than civic interest and improvement. Don't train with any but the highest class in the towns where you settle. Stand on the side of right and truth and purity, whatever it costs you. You will be the gainer rather than the loser in the end by doing so. Never wink at evil or allow yourselves to grow indifferent to it. Every man of you ought to plan to be a high-minded moral leader wherever you may practice your profession.

III. Be true to yourselves under all circumstances. There is a form of self-seeking most reprehensible and no man should indulge in it for a moment. When Blücher came to London after the battle of Waterloo, among other sights they took him up to the dome of St. Paul's Cathedral that he might look out upon

the world's capital from the best possible vantage ground. When he beheld the view, the narrator tells us, he leaned over the railing as if he would break it down, and with the blood reddening his face, exclaimed, "Oh, what a place for plunder!" That is some men's only feeling as they look out into life. What can I get out of it of gain or reputation or comfort or other personal advantage? Now what can I put into it. Stamp any such impulse out at the start, young gentlemen. Unless you dethrone your lower self, it will trouble you all your lifetime.

But while this form of self-seeking is not to be allowed, there is another kind which you must cultivate. Seek the ennoblement of self. Be painstaking about your character building. As the old adage runs, "Reputation is what you seem to be; character is what you are."

"Bright is the ring of words when the right man rings them;
Soft is the fall of songs when the singer sings them.

Still they are caroled and said, on wings they are carried
After the singer is dead, and the maker buried."

IV. Set yourselves to honor God, personally and professionally alike. It is too late to apologize for such an injunction as that. There are no atheists to-day. No one of any standing thinks of denying the existence of his innate religious nature. What folly that would involve. If you want to have an optimistic, useful, achieving resultant life, you must recognize and set yourself to obey the voice of God within. A man with an unruly, unheeded conscience is of all men to be pitied.

These are my ambitions for you men of the class of 1910; this the program I hand you to carry forth into the world with your diplomas. Would that you might take it and begin at once to follow it.

Shreiner has a legend of a new-born babe whose cradle was visited by a bright succession of angels. First came the angel of fame saying to the mother who stood hard by, "If I touch your child, all men shall honor him"; and next the angel of love, who promised upon touching the babe to give him the power to win the hearts of all men; then the angel of wealth, of happiness and

of health, each making its offer. But the mother waved all of these away. Finally, an angel appeared who said: "If I touch your babe, he shall have the power to choose the highest ideals and to carry them into practice," and the mother seized the angel, crying, "Touch, Oh touch, my child!"

Would that one higher than an angel might give you all such a benediction to-night as would set your faces toward the highest goal and ultimately bring your feet thither.

[NOTE.—Dr. John Balcom Shaw is one of the most fluent and stirring preachers in Chicago, a city which, like New York, is full of eloquent men, who, in Solomon's words, are "masters of assemblies." The speech reported here is not given verbatim, yet what there is of it is marked by literary flavor; by strong, practical, manly sense; by an appeal to the best in the mind and in the sensibilities. Above all, by its appreciation of the usefulness of the modern veterinarian to the communities. The position and power of Dr. Shaw may be better understood when it is remembered that he is better reimbursed for his services in this city than are the secretaries in President Taft's cabinet, and that, to-day, he is occupying, as an exchange, one of the greatest pulpits in the city of London; the metropolis of Great Britain.]

The commencement exercises of the Colorado Agricultural College were held in the college chapel, Ft. Collins, Col., June 2, 1910. The degree of Doctor of Veterinary Science was conferred upon twenty who had completed the veterinary course. The following are the names: H. S. Akin, E. H. Aicher, Y. R. Balmer, M. R. Blackstock, A. J. Bloomfield, L. A. Brown, P. H. Cottrell, V. E. Cram, W. T. Cuthbertson, A. A. Hermann, A. H. Hinken, F. D. Hylton, E. A. Meyer, G. McClain, J. C. Pace, W. Stewart, R. L. Van Sickle, W. G. Wadleigh, I. M. Watts, A. W. Whitehouse, V.S.

IN renewing his subscription to the REVIEW, Dr. S. H. Gibson, of South Mountain, Ont., Can., says: "I am exceedingly pleased with the REVIEW, and do not know how anyone would attempt to practise veterinary medicine without it."

"VETERINARY PROFESSION."*

BY G. F. RENNICKS (O.V.D.), SAUK CENTER, MINN.

While my subject is not a technical one, I feel that a few words from an old practitioner may be of interest to this Association, especially as they are the result of twenty-four years of active practice, in more than one section of this country. With this experience, it is needless for me to say that I have met with many peculiar conditions, and peculiar men, not only among the laity, but among the profession. It is questionable, in my mind, if there are more scrapping tools in evidence, or more hammers ready to knock and nail a brother's coffin together than are among our profession. Brotherly and professional love among our profession is buried under professional jealousy. We are ready to condemn a fellow veterinarian without asking ourselves if we can do differently. While our view on matters of ethics in many cases are dependent largely on our financial condition, we should remember that we owe the other veterinarians, the same consideration that we expect.

We are all anxious to make as much from our practice as it is possible, and in so doing we must not forget honesty and ethics, nor the fact that we should work for the interests of our profession.

Some men, however, are always ready to see evil in others, anxious to keep the other fellow down in the mud, taking advantage of every little thing to undermine or create suspicion. This may, perhaps, be due to the man's nature or because he does not properly weigh his words or hasty actions. It is the older practitioner who should be required to educate the young man or the new-comer entering into this profession in the state.

*Presented at the January meeting of the Minnesota State Veterinary Medical Association.

All veterinarians locating in Minnesota should, if their diploma is shown, be admitted to practice until they can take the examination. We know that considerable ill-feeling and petty jealousy has been shown such men, and that complaints have been made that they were violating the law, and for this reason should be barred from practice, until such time as they have passed the examination of the State Board of Examiners.

This is a wrong attitude to take. What can a young man do if he is compelled to refrain from practising until the next examination? It is not his fault if the Examining Board meet only twice a year. In my own case, after settling in Minnesota, I was prosecuted for illegally practising, simply because my diploma had been destroyed by fire and a duplicate one had not been obtained. The result was that it cost me a large amount of money, and the Examining Board, through its secretary, paid out a hundred dollars for nothing. The prosecution was the result of jealousy on the part of another practitioner. No good was accomplished. There are plenty of non-graduates who could be prosecuted.

But, apart from this, let me give the members a little advice. Do not expect the other men to do better than ourselves. The man who tries to think only good of every brother will not suffer from unprofessional acts from others. The young man should not sneer at the older competitors, because he does not use all the recent medicines or treatments.

Let them remember that when we began practice we brought with us from college the latest treatments, and experience has taught us which ones we have the most success with. Let no man carry the notion that his knowledge is above all others.

One man may lack experience in some certain things, yet in others he may excel. These meetings are for the good of individual members, and should be attended by all if we would advance in knowledge.

In conclusion, let us do unto others as we would that they should do unto us.

REPORTS OF CASES.

DISARTICULATION AND DISPLACEMENT OF THE PETROUS PORTION OF THE TEMPORAL BONE IN A DOG.

By A. T. KINSLEY, M.Sc., D.V.S., Pathologist, Kansas City Veterinary College.

The following case was an interesting one to those having the opportunity to observe the animal while alive, and it was thought that possibly a report of the case would be of value and interest to others.

The subject was a male fox terrier dog, about one year of age, with a history as follows: On or about the 12th of May the dog was observed by the owner to carry its head to the right and to continually strike his left ear with his left foot. At the same time the left eye was extensively congested and appeared to bulge from the orbit. The dog was hyper-sensitive and very irritable. The above symptoms became more aggravated and the dog was placed in the Kansas City Veterinary College Hospital for treatment, on the 16th of May, at which time the head was continually turned to the right with the nose projecting downward and backward. The animal still persisted in striking the left ear with his left foot. There was slight inco-ordination of movement, but the eye at this time had been relieved of the congestion. A positive diagnosis was not made at the time. The animal was carefully studied and on the 18th inst. it was concluded the dog was suffering from the effects of a tumor within the cranial cavity, abscess formation or an injury. Inco-ordination became more and more marked; finally the dog was unable to rise and could not stand without assistance when raised upon his feet. On the 17th it was noted that deglutition was difficult, and the 18th the pharynx was apparently paralyzed, the dog being unable to drink, though the muscles of mastication were apparently normal. No treatment except small doses of chloral-hydrate was administered.

The dog died on the evening of the 18th and was autopsied on the morning of the 19th. All internal organs were found normal, excepting hypostatic congestion of the left lung. On examination of the cranial vault, an extensive extravasation of blood was found on the left side of the inferior cervical region and extend-

ing up to and involving the area around the parieto-temporal conduit. From the appearance of the extravasate it had been the result of a hemorrhage that had occurred about a week prior to this time. On closer inspection it was found that the petrous portion of the temporal bone was separated from the basilar portion of the occipital as well as from the parietal bone, the squamosal portion of the temporal bone and from the sphenoid. The hemorrhage apparently had been the result of injury to the tem-



FROM PHOTOGRAPH OF DOG SHOWING TYPICAL ATTITUDE.

poral vein just within the parieto-temporal conduit. On opening the cranial cavity a considerable quantity of blood was found laterally and inferiorly to the cerebellum and extending inferiorly and surrounding the left crura cerebri.

By a consideration of symptoms and post-mortem findings it was concluded that the cause of the trouble was disarticulation and displacement of the petrosal portion of the temporal bone accompanied by injury to the temporal vein.

A FEW OF THE INTERNAL PARASITES OF THE HORSE AND SHEEP.*

By DR. C. C. STEVENS, Sandusky, Mich.

My first case was a four-year-old Western horse. I received a call from a Mr. Stone on the morning of April 23, 1909, and found on arrival a horse that had been ailing for about three weeks, but unusually wrong on this morning. And I was puzzled, as the symptoms I obtained did not give me conclusive evidence upon which I could base a diagnosis.

* Presented to the Michigan Veterinary Medical Association, January, 1910.

The symptoms were paleness of mucous membranes with a fairly strong pulse (38 to 40); respiration regular. One eyelid drooping, also one ear, and patient would stand wherever left on releasing hold on halter. The temperature was $105\frac{1}{2}^{\circ}$. After I finished my examination I told my client I could not make a diagnosis of the case, but that there was some constitutional trouble which was causing the extreme rise in temperature. So I advised giving nuclein solution in order to reduce the temperature through its phagocytic action on the blood, so I added 1 oz. normal saline solution to 1 oz. nuclein and gave intravenously; turned horse back in stall and went home, a mile, and had only arrived when I received a call the horse was dead. I had only one way left to vindicate myself, and that was to hold a post mortem and trust to luck.

So my assistant and I went back, and on post mortem found a yellow serous fluid in the abdominal cavity and about a quart in the thoracic cavity; all other organs normal in appearance.

On opening the stomach we found about sixty *strongylus armatus* or lumbricoids, in the small intestines about eighty more and thirty-eight tape worms, and in large colon thousands of worms attached to mucous coat of bowel in clusters like grapes, from one-half to two inches long. In the entire alimentary tract there was not over one bushel of food.

My next case was in a seven-months'-old colt, which fortunately was dead before I arrived, so held post mortem for owner's benefit (as well as my own). The small intestines were completely plugged for six or seven feet, and black, and contained about ten or twelve quarts of *strongylus armatus* (lumbricoids), also over eighty tape worms, and the stomach was completely filled with the *strongylus armatus*.

On May 13, 1908, I received a call to go and see some sick lambs, as the owner had lost some twenty the last few days, and more were sick. On arrival I found two sick and another had just died, so I tried to find out the history and symptoms of the case as well as possible. The owner told me all of the lambs were "smart as any other lambs up until about five or six hours of their death," and the first symptom was that they seemed to stray a short way off by themselves, diarrhoea, loss of appetite, stupor, finally lying down in a semi-comatose condition and remaining there until death.

From the above symptoms I could not make a satisfactory diagnosis, so I advised killing one of the lambs that was sick, but

in the early stage of the sickness, in order to be able to detect any lesions in the muscles or any of the internal organs in the body.

Accordingly I killed a lamb, bled it out completely and skinned it, with the view of searching for muscular or skin lesions, but found none. On opening the abdominal cavity I found all the internal organs apparently normal, but on rolling the viscera out on the ground there seemed to take place a peculiar peristaltic action or something similar to it. So I slit a small hole in the bowel and out slid a double fold of tape worms that completely filled the small intestines, and I removed seven worms fifty-three feet long, one twenty-eight feet and several from ten inches to four, five and six feet. I placed the whole amount at approximately 425 feet, but I feel sure I could say over 500 feet. I also examined the lungs and heart and found nothing unusually wrong.

This post mortem did not convince me that it was tape worm that was doing the work of destruction, so I held post mortem on one dead a few hours, and found the same results. Then I went and held a post mortem on one that died the night before, and found it just the same and fully as many worms.

The pasture the lambs and older sheep had was an old meadow, but good feed for sheep; and good pens for the night.

AN INTERESTING CASE OF DYSTOKIA.

By DR. S. G. BITTICK, Fort Worth, Texas.

I was recently called to a dairy barn near my city and found a cow in labor. Owner informed me that the animal had been in labor about twenty-four hours. I began getting ready for the undesirable operation, as every one around the dairy had exhausted their strength and knowledge. I had an anterior presentation, but was unable to deliver fœtus, so I decided on embryotomy, which I began first by removing limbs, and removed eight well-developed limbs; then removed viscera and then balance of fœtus. Animal had four ears, two in normal position and two small but well-developed ears back on the neck just in front of the shoulders. Two extra fore-limbs were attached to point of shoulders just in front of normal limbs, both hind limbs being attached to the biceps muscles. Young animal was fully developed and cow made a good recovery.

CORRESPONDENCE.

Editors AMERICAN VETERINARY REVIEW, New York:

Following a practice adopted during my first year as secretary of the American Veterinary Medical Association, I am appending herewith a preliminary outline of the next annual meeting and which, as is well known by this time, convenes in San Francisco, September 6th next.

Headquarters, the Palace Hotel, are situated at the corner of Market and New Montgomery streets, in the heart of the business district. The ball room of the same hotel will be given over to the association for meeting purposes. This hotel, offering many alluring attractions, is especially suitable for the occasion. Under normal conditions it has ample accommodations for all, but owing to the fact that during the same week there occurs in San Francisco a reunion of "native sons of California," we suggest that, to insure suitable rooms, those contemplating attending the A. V. M. A. meeting engage their accommodations at an early date. Other and excellent hotels are adjacent and offer a range of prices within the reach of all. By corresponding with Dr. R. A. Archibald, chairman of the local Committee of Arrangements, details can be worked out and desirable reservations secured.

It is anticipated that the attendance from among the thousand and more members will be especially large and that, further, the registration will be considerably augmented by the attractive five-day excursion from Chicago. Not alone, however, will the association be at San Francisco in force, but the list of delegates from other veterinary organizations is daily becoming more extensive, indicating a widespread representation of these official and most cordially welcomed visitors.

To all who can find it feasible to make Chicago an assembling point is offered the unusual attraction of a special train, if you will but give us your name; we need 100 or as many more as can aid in making this feature possible.

We present the following itinerary: Leaving Chicago on the night of August 30 (leaving hour to be announced next month),

the Veterinary Special Train will go over the Burlington route to St. Paul, skirting the Mississippi River for nearly three hundred miles, the scenic portion being passed during daylight. From St. Paul to San Francisco the journey will be made over the Northern and Southern Pacific lines. The route from St. Paul will pass through the beautiful Lake Park region of Minnesota; the wheat fields and "Bad Lands" of North Dakota on to the Yellowstone River, which is followed for nearly four hundred miles. Crossing the State of Montana, the towns of Billings, Livingston and Helena are passed to reach the base of the Rockies and the scenic canyon of Northern Idaho. Soon the State of Washington is reached and, although throughout this route varying stops are contemplated, it is at Spokane and Seattle that the banner holdups of the trip are planned.

At the former place the party will be the guests of the Spokane Chamber of Commerce from 12.00 o'clock noon to 8 o'clock p. m., September 2d. During this time the entertainers will tender the party an interurban trolley ride to Lake Cœur d'Alene, Idaho, where a steamer will be boarded for a trip around this beautiful lake. Luncheon will be served on board the boat.

During the early morning hours of September 3d there will be a drive down the west slope of the Cascade mountains, through the Green River Valley, and up to Seattle, where the party will be guests of the Seattle Chamber of Commerce, including among the features a visit to the Government Navy Yards at Bremerton; this, of course, necessitates a sail on Puget Sound. Luncheon will be served and the party will be shown the courtesies of the city of Seattle.

On the morning of September 4th the excursionists will pass over the Mount Shasta route, said to be the most scenic route in all America. Passing through the beautiful Willamette Valley with magnificent views of both Mount Hood and Mount Shasta, the route will continue down into the wonderful California country with one continuous panorama of splendor until reaching San Francisco on the morning of the fifth of September.

Members of this party will find it possible to return east by any direct route they desire to select and the Committee on Transportation Arrangements, headed by Dr. S. B. Nelson, hope that a large number of Eastern veterinarians will avail themselves of this opportunity to travel through the Northwestern part of the United States.

The rates for the excursion are particularly favorable; with stop-over privileges good until October 31st for \$77.50 from Chicago and return. The going Pullman rate will be \$17.50, or if two occupy one berth, one-half this expense for each individual; return about \$14.00.

Parties starting from Eastern points over Trunk Line or Central Passenger Association's lines will do well to consult their local agents before purchasing their tickets, as a slight reduction of the regular round trip price to Chicago will be operative. The round trip joining the special at Chicago from New York, Philadelphia, Boston or Washington, \$108.00 to \$114.00; from Buffalo or Pittsburg, \$91.00 to \$95.00; from Cincinnati, \$84.40; from Cleveland, \$87.75. Again, this same excursion can be participated in by residents of the states of Missouri, Iowa, Kansas, Nebraska or, indeed others, by arranging to join the train at St. Paul; and this at little, if any, extra cost over the present favorable schedule of prices for the convention, and which, bear in mind, are reduced for all points west of the Mississippi river. It will be a grand five-day ride, and all should arrange to join. If you contemplate joining the Veterinary Special at Chicago or elsewhere, write to Secretary Lyman, P. O. Box 901, Hartford, Conn. For information correspond with him.

A word of what we may look forward to in the way of literary entertainment. Many noteworthy contributors have volunteered to aid in making the features of the meeting attractive as well as profitable, not alone to the scientifically inclined veterinarian, the sanitary worker, the research man or the municipal inspector, but, likewise, to the general practitioner or surgeon will be allotted a share of program pleasures. Dr. Louis A. Merillat will open the session especially planned for surgery topics by an address, "The Present Status of Animal Surgery." Kindly undertaking to secure other essayists for the occasion, the doctor announces the following contributors for this surgical session: Dr. George R. White, "Surgical Restraint"; Dr. E. L. Quitman an address, "Hypodermic Anæsthesia in Domestic Animals"; Dr. James Robertson, "Veterinary Dentistry"; "Modern Obstetrics in Animals," by Dr. J. H. Blattenberg and "Remarks on Lameness in Horses," by Dr. Joseph Hughes.

The sessions aiming especially to attract the general practitioners are yet to be completed, but already include such men

and subjects as Dr. J. R. Mitchell, "Acute Indigestion of the Horse"; Dr. H. F. Palmer, "Nuclein"; Dr. D. B. Clark, "Johne's Disease"; Drs. S. H. Ward and W. L. Beebe, "Hæmorrhagic Septicæmia in Sheep"; Dr. M. P. Ravenel, "Anthrax in Swine"; Dr. J. P. Foster, "Dourine," and Dr. F. F. Brown with title yet to be submitted.

The research men and scientific investigators can equip their store of knowledge by a session offering such topics as "Parasitological Investigations and Instruction in Semi-Tropical Regions," by Professor W. B. Herms; "Phagocytosis," by Dr. B. F. Kaupp and Dr. G. H. Glover; "Animal Diseases in the Imperial Valley of California," by Dr. C. L. Roadhouse, and further contributions by Drs. Stange and Dimock; Dr. J. R. Mohler and Dr. J. W. Connaway, titles to be announced later.

Tuberculosis will have an interesting inning under the auspices of the Committee on Diseases, and will include besides a short committee report a summary of the finding of the International Tuberculosis Commission now working under the initiative of the association, and papers by Drs. S. H. Gilliland and E. S. Deubler, "Artificial Immunization of Cattle Against Tuberculosis"; Dr. C. M. Haring, "Bovine Tuberculosis Investigations at the University of California Farm"; Dr. M. H. Reynolds, subject to be announced.

Milk Sanitation, an all-important factor in the professional life of the present day veterinarian, maintains a gala of interesting features and will be spread before the Wednesday evening session by the following entertaining speakers: Dr. C. A. Dukes, President Alameda County Medical Association; Dr. William F. Snow, Secretary State Board of Health; Dr. S. B. Nelson and Dr. Charles Keane.

Death, an unfortunate asset of age, has crept into our lines during the past year as never before, and hence it is especially fitting that recognition should be made of those who have so loyally aided the purposes of the association in the past. To this end, Dr. W. Horace Hoskins has kindly consented to offer "A Nation's Loss a Profession's Tribute to Fallen Leaders."

Entertainment for the ladies and visitors has not been overlooked, space precludes elaboration of this important feature and its manifold attractions. Come. Bring your families and let them enjoy it. The whole week beginning September 6th will be a feast for the mind and body and those that miss this opportunity lose a chance of a lifetime.

R. P. LYMAN, Secretary.

Editors AMERICAN VETERINARY REVIEW, New York City.

In view of the prospect of many veterinarians and their families visiting the Yellowstone National Park either on their way to or on their return from the San Francisco meeting, I am sending such information as I have been able to secure relative to the park trip.

The park tourist season for 1910 is from June 15th to September 15th. The transportation companies claim that they can not give reduced rates for parties, and therefore my efforts to secure club reduction rates for our friends availed nothing, the companies claiming that the United States Department of Interior regulates their every action, and will not permit them to deviate from their regular advertised prices.

The three principal transportation companies receiving tourists from the Northern Pacific Railroad and their time and rates are:

The National Park Transportation Co. Address, Ft. Yellowstone, National Park, Wy. Time for trip, six days from Livingston, and practically five and a half days in the park. Fifty-five dollars from Livingston, which includes the hotels, board and lodging and transportation.

The Wylie Permanent Camping Co. Address, Livingston, Mont. Time, six days from Gardner. Forty dollars from Gardner, including board and lodging in tents and transportation.

The Shaw & Powel Camping Co. Address, Livingston, Mont. Time, five and a half days from Gardner. Thirty dollars from Gardner, including board and lodging in tents and transportation.

By writing to any one of these companies you can obtain literature on their particular facilities, which will give fuller explanation than I can give here. All those contemplating making the park trip with the "American Veterinary Special" of August 24th from Chicago should arrange with the transportation company previous to starting.

In view of the fact that the Yellowstone National Park is the most picturesque and wonderful of the earth's phenomena, and that thousands of people from all parts of the world visit there each season, it ought to be sufficiently attractive to induce many of our people to take the short time necessary for the trip, when they can get it, too, at nearly the cost of the park trip by taking the "Special of August 24th." The park is owned and controlled

by the United States Government, soldiers being stationed there for the protection of it and the people. The roads are kept as smooth as paved streets, even sprinkling wagons are kept in constant use during the tourist season; however, it is impossible to keep down all of the dust, and it is, therefore, recommended that tourists take dusters with them, also a heavier coat or wrap for use in the evenings.

Gardner is fifty-four miles from Livingston, and the railroad fare for round trip is \$3.40.

I shall be pleased to help arrange for this trip or give any further information.

Very respectfully,

A. D. KNOWLES.

HORSE SHOWS IN 1910.

Culpeper, Va., July 4-5.	Warrenton, Va., August 31-September 1.
Bayshore, N. Y., July 21-23.	Newport, R. I., September 3-6.
Long Branch, N. J., July 24-29.	Rutland, Vt., September 6-9.
Manassas, Va., July 27-28.	Syracuse, N. Y., September 12-17.
Orange, Va., August 3-4.	Ogdensburg, N. Y., September 19-23.
Sea Girt, N. J., August 4-6.	Poughkeepsie, N. Y., September 28-29.
Charlottesville, Va., August 9-10.	Bryn Mawr, Pa., September 28-30.
Narragansett Pier, R. I., August 12.	Brockton, Mass., October 4-7.
White Sulphur Springs, W. Va., August 12-13.	Louisville, Ky., October 10-15.
Front Royal, Va., August 16.	Atlanta, Ga., October 18-21.
Cobourg, Ont., August 16-19.	St. Louis, Mo., October 24-29.
Bar Harbor, Me., August 23-25.	New York (National), November 14-19.
Berryville, Va., August 23-25.	

DR. C. B. FREDERICK, Canton, O., in renewing his subscription to the REVIEW says: "Dear Sirs—Here's your money—three dollars (\$3.00). The most profitable asset of the busy practitioner."

Secure a berth on the "American Veterinary Special." Write Secretary Lyman now, at his Hartford, Conn., address, P. O. Box 901.

OBITUARY.

FRANCISCO P. BOULANGER, D.V.S.

Dr. Francisco P. Boulanger died suddenly at his home in Hoboken, N. J., June 10, 1910. Dr. Boulanger graduated from the New York-American Veterinary College, class of 1907, and entered as an assistant in the practice of the late Dr. D. J. Dixon, of Hoboken, N. J., where he remained until the spring of 1909, when he left to accept a position in the United States Army, reporting for duty in the Philippines. On the death of Dr. Dixon in September of the same year, he returned to Hoboken to take the latter's practice, which he was conducting up to the time of his death. The doctor was twenty-four years of age and a widower at the time of his death, his young wife having died previously. He is survived by his parents, two brothers and a sister.

CHARLES FALCONER, V.S.

Dr. Charles Falconer died at McKeesport, Pa., November 1, 1909, in the fifty-fourth year of his age, after a protracted illness due to cancer of the stomach. He was a native of Kendal, N. Y., where he was a school teacher and borough principal for several years. He then decided to study veterinary science and entered the University of Pennsylvania, where he attended one session; then spent the next session at Ontario Veterinary College, where he graduated in the spring of 1891. He was a member of the Masonic Fraternity, Woodmen of the World, and Pennsylvania State Veterinary Medical Association. He always spoke kindly of his fellow-men, was genial and generous at all times; was an excellent type of the old school of rough and ready practitioners, and devoted his entire professional career to his one well-chosen locality in Allegheny County, Pa. He was highly respected by a large clientele, was a bachelor, and his estate passed to three surviving sisters in New York State.

J. STUART LACOCK, V.M.D.

Dr. J. Stewart Lacock died at Pittsburgh, Pa., January 6, 1910, in the thirty-fourth year of his age, after a brief illness

due to pneumonia contracted while on a business trip in the Northwest. He was a native of Allegheny, Pa., where he graduated from the high school, and entered the University of Pennsylvania, where he received his veterinary degree in 1895. He was a general practitioner and Allegheny City Veterinarian for several years. He then moved across the river to Pittsburgh, where he erected and conducted large boarding stables and became interested in large transfer companies and some real estate deals. He was an active member of the leading athletic, business, and social clubs, American Veterinary Medical Association, and the Pennsylvania State Veterinary Medical Association. He took an active part in suppressing and eradicating the outbreak of epizootic aptha in Pennsylvania. Dr. Lacock was an agreeable and polished gentleman and occupied a good social and professional status in Pennsylvania. He is survived by his parents, several brothers and sisters, a widow and four small children.

OLIVER R. MOYER, D.V.S.

Dr. Oliver R. Moyer died April 24, 1910, at his home in Des Moines, Ia., after an illness of several weeks, due to complications which had distressed him for some years. For the past three years he had been in the employ of the U. S. Bureau of Animal Industry at Des Moines, Iowa, as veterinary inspector, and previous to that time practised veterinary medicine at Cedar Rapids, and in earlier years in Western Illinois and Pennsylvania. Dr. Moyer was a graduate of the American Veterinary College, class of 1887; a member of the American Veterinary Medical Association, the Iowa Veterinary Association and several fraternal organizations. His age was 54 years.

ROBERT KOCH, M.D.

Dr. Robert Koch, one of the most eminent bacteriologists of the age, died at Baden, Germany, on May 26, at the age of 67 years. Dr. Koch's contributions to medical science were numerous and valuable. His gift to veterinary science and to the world in general of tuberculin, is invaluable, and beyond all calculation. His death removes from the world a valuable scientist, whose loss will be keenly felt in the field of investigation. A résumé of his life-work and accomplishments will appear in our European chronicles in our next issue.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

FRACTURE OF THE BACK, LAST CERVICAL VERTEBRAE AND FRONT RIBS [*P. G. Bond*].—Rather well bred ride and drive mare is in harness, and while walked by the groom one of the reins got around the point of the shaft; the animal bolted and ran away, knocking with force against a wall and apparently turning a complete somersault, when she was then secured and walked to her stable, some 500 yards away. She stands fairly well, showing, however, marks of having received severe injuries. The right shoulder has had a severe blow and in the chest in front there is a deep cup-like depression. She hangs her head at times and keeps the right fore leg away from the sternum. The fetlock is bent forward, and the hind quarters show signs of fractured pelvis. No crepitation could be detected. The next morning the animal seems brighter; has laid down during the night, and keeps doing it for four or five days. In the night of the fifth day she lays down once more, but then is unable to get up. The case is hopeless and the mare is destroyed. At the autopsy there was found a fracture of the back just behind the croup, the last cervical vertebrae was smashed in fifteen pieces, the two first ribs on the right side and the first one on the left were also fractured.

Besides the fact that the animal was able to lay down and get up for four or five days, it is strange that the mare kept up eating and drinking good, defecated and urinated normally, and that her temperature never went higher than 102° F.—(*Vet. Record.*)

CHLORALOSE AS AN ANAESTHETIC FOR DOGS [*H. Gray, M. R.C.V.S.*].—The author writes that it is a very powerful hyp-

notic, producing sound sleep in dogs without causing any irritation of the stomach or intestines, and having no cumulative or disagreeable after effects. Given in anæsthetic doses it abolishes sensibility to pain and diminishes or removes the corneal and solar reflexes. The pupils and eyelids are contracted. When the drug commences acting, the respiration is increased in frequency, then gradually diminishes and becomes deeper as in natural sleep. There may be some slight choreic movements of the limbs or other parts. The temperature is slightly reduced. The anæsthetic sleep may last some hours. The general functions are not affected by its administration. It has none of the disadvantages of chloral. It may be given by intravenous injection or per mouth in the form of mixture, powder, capsule or mixed with food. If given per mouth, full anæsthesia is obtained within half or three quarters of an hour. As an hypnotic the doses are per lb. of the body one-sixth to one-third of a grain; as an anæsthetic, one-third to one grain intravenously, and 1 to 2 grains given in food or draught. Cats are more susceptible to its effects than dogs. The maximum dose should never go beyond half a grain to the lb. of the body-weight. The manifestations are the same in both animals. Mr. Gray thinks that as an anæsthetic it has an advantage over all others, as it is safe and easy to administer.—(*Vet. Record.*)

INTESTINAL OBSTRUCTION IN A DOG WITH UNUSUAL CLINICAL HISTORY [*E. Wallis Hoare, F.R.C.V.S.*].—A medical man owns a three-year-old Airedale dog. Up to three weeks ago he was in perfect health and then he began to lose condition and vomited occasionally. The appetite was capricious and the bowels normal. Careful examination failed to detect any evidence of disease in the various organs and he was placed under observation. He ate daintily, but drank freely. As the bowels had no action, castor oil with five grains of hyd. c. creta was given, and enemas added to them so as to obtain a good action. After a few days obstruction had to be relieved with enemas and also again with oil and hyd. c. creta as before. The time fluid feces were passed. The animal then became weaker, vomited freely of bile-stained fecal material, and died during the night. *Autopsy.*—Small intestines enormously distended with fluid ingesta. Duodenum and stomach contained bile-stained fluid. Mucous membranes yellowish brown in color. Towards the last third of the ileum there was two sudden constrictions between which there

was a large pouch formed by the intestines and containing two stones; one was wedge-shaped and weighing 1 oz. 6 drachms, and the other was smaller, The colon contained rather dried feces.—(*Vet. Record.*)

AN INTERESTING CASE [*Mr. G. H. Livesey*].—This was reported as that of a dachshound which had gone into a wood and on coming back was sick as if he had been eating filth. He frequently vomited. When Mr. L. was called, the dog had vomited a large quantity of pure blood, not mucus tinged with blood, and it was supposed that the dog had ruptured some blood vessel. The next morning he was found dead, having vomited a huge quantity of blood. The autopsy revealed a piece of bone lodged behind the second rib, right over the aorta. "The bone had evidently been in position for about eight days and caused ulceration of the œsophagus, the sharp point having penetrated through it and through the aorta."—(*Vet. News.*)

TUBERCULOSIS IN THE DOG [*Henry B. Eve, M.R.C.V.S.*].—Since considerable time, this retriever has been ailing; and notwithstanding that he was carefully nursed by the owner, has not improved. He appears weak and in an emaciated condition. He can scarcely stand. He is also covered with lice (*Tricodectes Latus*), and besides has tape worm. He manifests great thirst, has excessive diarrhœa, and when micturating is forced to assume the position of a bitch, being unable to stand on one leg. His appetite is very capricious. Good nutrition, rich diet, syrup-iodid-ferri are prescribed and baths to remove the lice. For a few days he seems to improve, but soon has a relapse. He is tested with tuberculin with negative results. The injection was made in the region of the orbit which become swollen at the eyelids with conjunctivitis and lacrymation, but no elevation of temperature. The dog died forty-eight hours after. Large tumor-like growths were found in the spleen, which was itself much enlarged. These tumors showed little tendency to caseation. Some have a sarcomatous appearance. Lungs have lesions of broncho-pneumonia without caseation, and in some parts were in a state of atelectasis.—(*Vet. Record.*)

DISPLACEMENT OF THE URINARY BLADDER IN A HEIFER [*S. J. Notton, M.R.C.V.S.*].—After difficult parturition a small Guernsey heifer was unable to rise and strained violently. The

afterbirth was expelled, but the straining continued, and a rose-red prominence was seen through the labia of the vulva. This increased, and outside the vulva had attained half the size of a regulation association foot ball. It was the urinary bladder, filling the entrance of the vulva, with the os uteri above it and much distended by urine. To empty it was quite difficult, yet was done by opening the urethra; also turned upon itself, with a finger, and when the organ was empty it could be returned into position. But few doses of sedative medicine had to be given before it remained in place, the heifer straining violently for some little time and until the sedative effects were produced. For four days after, catheter was passed once daily. The heifer recovered without further trouble.—(*Vet. Journal.*)

SINUS IN INFERIOR MAXILLARY BONE [*E. Wallis Hoare, F.R.C.V.S.*].—Old farm horse had difficulty in feeding caused by a swelling on the lower jaw on the near side, which is increasing rapidly. It is hard, painful and shows a fistulous tract which permits a probe to enter a large cavity in the bone. The second molar tooth of the affected side is missing and the probe passes from the fistula within the cavity. By trephining the opening of the maxillary is enlarged, the cavity entered and the tooth, decayed and black in color, is extracted. After removal of semi-masticated ingesta, irrigations were carried out to keep the parts cleaned. The horse was unfortunately lost sight of, but he certainly did well.—(*Vet. Journal.*)

GANGRENOUS STOMATITIS AND GASTRITIS IN A DOG—SPONTANEOUS RECOVERY [*Prof. G. Wooldridge, F.R.C.V.S.*].—History.—For the three first weeks that he was with his owner the dog appeared well, but soon began to vomit. He had fair appetite, ate small quantity at a time. Frequently during the day would vomit black offensive liquid. He then began to dribble black slimy stuff. He had diarrhoea. Took worm medicine without passing worms. One day he spat a dirty yellow bit of flesh, thin and doubled up. He had difficulty in drinking, appearing to bite rather than lapping his water.

Condition When Seen by the Writer.—Dog is quite bright, thin and rather weak. On opening the mouth it was found that he had lost the whole of the free portion of the tongue back to the frenum, which explained the difficulty in drinking. The stump was healing well. The dog vomited no more and his appetite

was improving. Temperature was 102.2° F. Tonic treatment with collutorium were prescribed with directions to have the dog provided with water in a deep basin, from which he soon learned how to suck it. He recovered well.—(*Vet. Journal.*)

PROSTATIC ENLARGEMENT CURED BY CASTRATION [*Prof. F. Hobday, F.R.C.V.S.*].—Aged 10 years, this dog suffers with very obstinate constipation. He also has a large perineal hernia as big as a good size cocoanut. Rectal examination reveals the presence of an enlarged prostate, quite as big as a tangerine orange, and painful on pressure. Medical treatment having failed to relieve, castration was performed. The prostate became atrophied and less than normal size, the pelvic hernia was reduced and the constipation disappeared.—(*Ibidem.*)

INTERESTING OVARO-HYSTERECTOMY [*Same Author*].—Very valuable Pekingese bitch is very heavy in whelp. She has fainting spells, but as she is very near the date of whelping, only careful nursing, dieting and judicious use of stimulants were recommended to keep her going to the day of the expected event. Finally she became so very ill that it was imperative to deliver her at once. Under anæsthesia of chloroform, ovaro-hysterectomy was performed and eight fine puppies removed. Tinct. of iodine was used externally as antiseptic. The recovery was uninterrupted. The puppies did well with their foster mother for five days when they all took cold and died in one night.—(*Ibidem.*)

TUBERCULOSIS IN CALCUTTA [*S. N. Mitter, Bengal Vet. College*].—Referring to the presence of bovine tuberculosis in India, a concise history is given of four cases that were brought in the College Hospital. The first case was sick only one month, and at the autopsy lesions were found in the lungs and pleura, the lungs being full of tuberculous foci with caseation and calcification. The bronchial glands were also tuberculous. The bacilli were abundant in the lesions. Other animals from the same herd reacted with tuberculin test, but no clinical signs of the disease were present. The second case presented marked symptoms which were confirmed by tuberculin, the temperature rising from 101° to 104° F. at the eighteenth hour. The lesions were chiefly confined to the serous membranes, lungs, heart and liver. Parietal and visceral serous membrane being studded with in-

numerable tuberculous nodules. There were some in the lungs, the lymphatic glands, the diaphragm and the liver. Bacilli were plentiful. The tuberculin used with that animal was at least four years old. The third case presented symptoms not indicating tuberculosis. There was salivation and diarrhoea. Rinderpest was suspected. The animal showed symptoms of pneumonia and died in three days. She had lesions of tuberculosis in the lungs, bronchial and mediastinal glands. The intestines were congested. The fourth case was seen shortly before death. When it occurred lesions were found in the lungs, with a large number of tuberculous abscesses.—(*Journ. Comp. Pat. and Therap.*)

MALIGNANT GOITRE IN A DOG—CARCINOMA OF THE THYROID GLAND WITH METASTASIS IN THE LUNGS [*John Lindsay, M.D., and D. McLeod, M.R.C.V.S.*].—Four-year-old bull dog had since three weeks a swelling in the left sub-maxillary region. It increased and burst, discharging blood-stained pus. Treated, the swelling subsided but returned and again rapidly grew larger. The dog is off his food, has great thirst and drinks any quantity of water. His appearance is poor; he has twitchings of the muscles; the temperature is 102° F., pulse 80. The face and neck are œdematous, especially on the right side. There is profuse salivation. The throat and teeth are quite healthy. Iod. of potassium is prescribed internally and iodine liniment externally. This treatment was carried out for two weeks. The œdema subsided and left a distinct tumor, freely movable, on one side of the larynx. This was taken for swollen lymphatic glands. Tuberculosis was also suspected. The treatment was continued for a few days and then came directions from the owner to operate if the conditions indicated it. It proved such that the animal was destroyed. The histological examination revealed the nature of the lesions, portions of the lungs and of the lobes of the thyroid gland, viz., a mixture of sarcomatous and carcinomatous degeneration.—(*Ibidem.*)

RUPTURE OF THE SMALL INTESTINES WITH PERFORATIVE PERITONITIS [*E. Wallis Hoare, F.R.C.V.S.*].—This aged mare had been in very poor condition, but on receiving patent food in addition to her ration, she has much improved. She has had many repeated mild attacks of colic. One morning she is found breathing quickly with head depressed and nostrils dilated. She strains violently to micturate and purges at intervals; feces very

fetid. She has tympanitis; the pulse is quick and weak. The mucous membranes are deeply injected. Temperature is up 102.4° F. The countenance is very anxious. Attempts to pass a catheter are difficult and no water can be drawn off. In the afternoon she becomes uneasy, lays down and rises, yet shows no evidences of great pain. She dies. At post mortem the abdomen when open gives escape to rush of fetid gases. Lesions of diffuse peritonitis are present and a large number of *Ascaris Megalocephalus* are found. There is a small rupture near the commencement of the ileum, through which a worm is protruding. A small sac had formed in the intestines and the edges of the rupture show inflammatory action. Other parasites were found in the intestines as well as in the peritoneal cavity. No evidence of enteritis were present.—(*Vet. Record.*)

NEURECTOMY IN HORSES [*Malcolm Allan, M.R.C.V.S.*].—The author has operated about three horses. Median neurectomy he finds the most useful in cases of knee splints, contracted tendons and sesamoid lameness. Sometimes he has operated on both legs at once with good results and never known any complications to occur. Median and ulnar neurectomy conjointly is unsuccessful. Degeneration takes place within one or two months. Ulnar neurectomy he has performed for exostosis on outside of fetlock and knee. Anterior tibial neurectomy he considers useless, as the horse never seems to get proper control over his legs after. Posterior tibial neurectomy is worth doing for spavin, contracted tendons and ringbones. A percentage get sound, some remain lame. Plantar neurectomy is useful for ringbones, navicular disease and laminitis, if the soles are not dropped. He has seen one neuroma after median neurectomy, the only one he has ever observed.—(*Vet. Record.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

OSSIFIED CARDIAC AURICLES IN A HORSE [*Mr. Roeland*].—This is not a rare lesion. The present case was observed in a nine-year-old bay horse killed because of glanders. About eight or ten days before being killed, he presented two symptoms which indicated cardiac lesions, viz., large swelling under the

thoracico-abdominal inferior region and a marked venous pulse. There was no swelling of the legs. On account of the ugly disposition of the horse, auscultation of the heart was not made. The lesion was located on the right auricle. The cavity was considerably reduced by almost complete ossification and the great thickness of the myocardium, which was quite vascular, very hard and compact. Externally it was covered with a thick coat of cartilage. The horse had worked well all the time except five or ten days before his death.—(*Rev. de Comp. Pathologie.*)

CAMPHORATED OIL IN THE TREATMENT OF PNEUMONIA IN HORSE [*Mr. Grollet*].—The author has used it in hypodermic injections with great advantage in infectious pneumonia, when heart failure was threatening. In broncho-pneumonia of young animals, young dogs principally, it has given good results. The doses used were 10, 20, 25 c.c. of oil for horses. The injections can be repeated several times during the day. In dogs the dose is from half to five c.c.—(*Ibidem.*)

TORSION OF THE LARGE COLON IN THE HORSE [*A. Labrousse and A. Louis*].—Three-year-old gelding presented the symptoms of a mild attack of colic. He received hypodermic injections of pilocarpine and walking exercise, with dry frictions on the abdomen. He is to be seen later. Then the colic has become more severe, the conjunctivæ are congested, pulse is small, the temperature 39° C. There is tympanitis on the right flank. At the rectal exploration it is observed that the pelvic curvature of the large colon is pushed to the left, pressing in the pelvis and is dilated. The third portion of the colon is placed immediately above the second and more to the right. The blood vessels of the colon are felt gorged with blood. The rectal examination permits also to feel the point where the large colon is twisted. The bladder is emptied with a catheter, the horse is cast and hobbled and his body made to roll as is done for cattle to relieve the torsion of the uterus. Half a roll from the left side on his back and again until the complete turn is made. One arm in the rectum feels that the abdominal cavity has more space, the pelvic curvature has resumed its position. A second complete turn of the body is executed and the horse allowed to get up. He is relieved, has no more colic, passes wind and defecates. A second injection of pilocarpine, enemas and rithargol completed the treatment.—(*Rec. de Med. Veter.*)

PERITONITIS FOLLOWING IMPROPER PUNCTURE OF THE RUMEN—CHRONIC INFLAMMATION IN CONNECTIVE TISSUE—OCCLUSION OF THE INTESTINES BY ABSCESSES [*Pierre Bitard*].—Suffering with indigestion, a cow had puncture of the rumen performed by the owner, very near the lumbar vertebræ and the point of the ilium. Not relieved the writer is sent for two days after. The animal is standing, moaning when made to move; the peristaltic contractions of the rumen are almost absent. Complete anorexia, no rumination and severe constipation are present. The temperature is 38.2° C., pulse 82. A purgative treatment is prescribed. Light diet. No improvement. Pilocarpine and sulphate of veratrine are then resorted to. Recovery is slow to take place. It is accompanied with mild relapse and now and then with dull colic. The diet is increased but with it the symptoms become more alarming and finally fearing a fatal termination the cow is sent to the butcher. In the carcass there was found a thick organization of the connective tissue uniting the rumen to the surrounding parts, which required the use of the sharp instrument to divide it. Between the sheaths of the omentum a number of little abscesses, closed, isolated or in clusters. They were not in communication with the small intestines nor in the peritoneum and contained pus which was of various nature, thick, creamy and without odor or again grumelous, or floating in a white liquid mass. These abscesses prevented the migration of feces through the intestines and would have ultimately caused death by putrid infection.—(*Prog. Veter.*)

ABSCESSES OF STRANGLES WITH PERFORATION IN THE OESOPHAGUS [*Mr. A. Magneron*].—Eight days after being purchased this yearling filly was taken with strangles. She had thick, repeated coughs, soreness of the parotid region, difficult deglutition, pharyngeal discharge, etc. Notwithstanding abortive treatment the parotid gets the seat of diffused swelling, very painful on pressure. The temperature rises to 39.5° C. There is now difficulty in the prehension of food, the appetite gives away and the nasal discharge becomes abundant and having an odor of caries. After two days the parotid abscess is open and instead of creamy characteristic pus, there is escape of a semi-liquid fluid, mixed with food and having a repulsive odor. The animal is offered a pail of water; she drinks, but all the fluid comes out through the opening of the abscess. Normal feeding being impossible, the animal is sustained for a few days by rectal

injections, but she dies after the second day. The parotid gland was found necrosed, the parotido-auricularis muscle destroyed, and an abundant purulent collection of the guttural pouch with an irregular perforation of the œsophagus immediately at its origin, were the lesions observed at the autopsy.—(*Rev. Veter.*)

PARALYSIS OF THE PENIS FOLLOWED WITH COMPLETE SLOUGH OF THE CORPUS CAVERNOSUM [*Prof. Coquot*].—This occurred in an old horse which was found in his stable, cast and riding a flying movable partition, and to rid himself of his position had struggled during the night. When delivered he presented a number of superficial wounds of the peritoneum, abrasions of no great importance. Three days later, as he was taken out, he had paralysis of the penis, which was hanging swollen and cold out of the sheath. Scarifications, cold douches, and iodide of potassium internally failed to give any relief and amputation was decided. The operation was performed in the usual classical way. Flaps of the slitted urethra after proper dissection being secured to the skin, an elastic ligature being applied a short distance from the point where the penis was to be amputated. Every thing went as usual for some two weeks, the elastic ligature and the stump of the cut penis sloughing off without difficulty, but instead of subsiding, the swelling of the parts remained and a few days later a small piece of mortified tissue, soft and soaked in pus, was found protruding from the stump. Taken hold of with forceps and gently pulled out, it came as a long greyish ribbon, bifid at its superior extremity, measuring about 60 centimeters in length, thicker at its superior border and having a semi-circular groove in the entire length of the inferior. It was the entire corpus cavernosum with its erectile tissue. Above the urethra and parallel to it there was another canal formed by the fibrous envelope of the corpus cavernosum. After this complication, which requires simple attention, the recovery went on without trouble. *Prof. Coquot* explains the complication as the result of thrombosis of the bulbo-cavernous arteries, sequelæ of the original accident received in the stable.—(*Rec. de Medec. Veter.*)

PECULIAR CASE OF INTESTINAL INVAGINATION [*E. Tenier*].—This gelding had very violent colic. His pulse is normal, respiration not accelerated, visible mucous membranes not congested, ears cold, no tympanitis, but the animal has very violent spasmodic pains and he throws himself down with great violence.

He is constantly shaking his head up and down. Warm injections and arecoline are ordered. There is no improvement the next day and the symptoms are about the same, but the animal is continuously striking the floor or the walls of his box, with the right fore foot and is looking most of the time towards his right flank. An intestinal obstruction or a volvulus or a twist of the large colon are suspected. Rectal examination is unsatisfactory. But pressure upon the large intestines or traction made on it give rise to violent expulsive efforts. Large doses of aloes are prescribed. After three days purgation takes place. But soon the symptoms grow worse and the animal dies. *Post mortem*.—Sero-bloody exudation in the abdomen, accused congestion of the cross of the cæcum, and when the large colon is cut open, it is found obstructed by a mass of dark purplish color, which proves to be the free portion of the cæcum, which is invaginated and completely enclosed in the cavity of the folded colon. By its opening of communication with the colon, the cæcum had inverted itself so as to introduce two-thirds of its dimensions into the large colon; the cross of the cæcum alone, held by its peritoneal ligaments was not able to follow the entire process of invagination.—(*Rec. de Medec. Veter.*)

FIBROMA OF THE VAGINA IN A COW—INJECTION OF RESORCINE—RECOVERY [*Mr. G. Patard*].—Four-year Normandy cow is reported as having a mild vaginal prolapsus. Examination through the vulva reveals the presence of a hard, very large mass which is attached on the right side of the vaginal wall. It protrudes from the vulva and interferes with micturition. The cow is secured, after dissection made carefully of the peduncle; the growth is removed with the *ecraseur*. Quite a large hemorrhage follows which is stopped by packing and suture of the vulva. These were removed after twenty-four hours; the animal has another hemorrhage; Resorcine 1 to 100 is given in injection; the expulsive efforts are gone and hemorrhage does not return. These injections were kept up for a few days. Complete cicatrization followed. The tumor was a fibroma and weighed 1 kilog. 750 grammes.—(*Ibidem.*)

PHALANGEAL OSTEITIS COMPLICATED WITH OSTEITIS FROM LAMINITIS [*Mr. G. Morel, Army Veter.*].—This is the record of a case where the lesions of both affections were found. A six-year-old mare, rather well bred, had a slight lameness of the right fore leg. She also had an abscess at the poll. The off fore foot

is slightly warm, and the sole is tender all over. The mare has always exhibited hesitancy in putting weight on her fore feet; she steps on the toe, principally, on hard ground. Osteitis of the phalanx is diagnosed. The mare is treated accordingly. The abscess is soon cured. But the lameness remains the same and one morning the symptoms of laminitis leave no doubt as to her condition. Bleeding, pilocarpine, tartar emetic, antifebrine and baths do not save her from chronic lesions and the mare is sold.

Condition of the Os Pedis after Boiling.—The anterior face of the bone is covered with long crests running from up to downwards. The plantar notches are transformed in foramina, the basilar processes extend over the articular surfaces and the retrossals beyond the end of the preplantar fissure. The anterior border is soft and brittle, the vascular openings are very large and the bony substance is much rarefied. The spongy tissue is ecchymotic. There are marks of severe rarefying osteitis.—(*Rev. Gen. & Med. Vet.*)

INDIGESTION WITH OVERLOADING—GASTROTOMY BY FREE INCISION MADE WHEN THE ANIMAL IS IN EXTREMIS [*Mr. P. Bitard*].—Fine draught steer has indigestion with an overloaded rumen, and notwithstanding two punctures of the rumen made by the owner, the animal is threatened with suffocation. He drops down almost breathing his last. With a straight bistouri a free incision is made by the writer, and although 7 or 8 centimeters long, it is insufficient to allow the escape of the fermenting food contained in the rumen. It has to be enlarged 10 centimeters more and then the rumen can be cleared of an enormous quantity of its contents. Repeated tractions of the tongue, cold applications on the head, threatening asphyxia is avoided and the animal slowly seems to return to life, helped with alcoholic drenches. When after waiting an hour the prospects are brighter, the author proceeded to suturing the wound, a not very easy task, as on account of the bad position in which the animal was when the incision was made, the edges of the various layers of the rumen muscles and skin did not correspond very well. However, the sutures were applied involving the three coats, a thread ribbon aseptized with peroxide being used. Stimulating drenches of wine or alcohol were kept up. External disinfection was made with peroxide. An abscess by subcutaneous infiltration and a fistulous wound remaining for a while were the only events of the recovery, which required several months to be complete. (*Prog. Veter.*)

SOCIETY MEETINGS.

SOCIETY OF THE ALUMNI OF THE 'SCHOOL OF VETERINARY MEDICINE, UNIVERSITY OF PENNSYLVANIA.

The annual reunion for 1910 was held June 15th. The forenoon witnessed the culmination of the three years' course at the alma mater for the class of 1910. They, 35 in number, received their diplomas at the hands of Provost Harrison in the American Academy of Music and then listened to an oration by the Secretary of State, Hon. Philander C. Knox.

In the afternoon, the alumni both young and old, gathered on the pleasantly situated grounds of the H. K. Mulford Vaccine and Antitoxine Farm at Glenolden, where the yearly contest in field sports took place. The baseball game between the alumni and the graduating class was won by the former by a score of 10 to 5. The fat man's race was run in three heats, the first being won by John R. Mohler, the second by A. D. Goldhaft, and the final by A. D. Goldhaft. The 100 yards dash was easily captured by the deer-footed G. M. Graybill, while the supple J. H. Engle excelled in the broad jump. J. F. McDonough won the quarter-mile run. All victors, including the members of the winning baseball team, were given valuable souvenir prizes for their achievements at the evening entertainment.

A short visit was paid to the antitoxine laboratory under the guidance of the director, Dr. Parke Hitchins, who as well as the other members of the firm showed unlimited kindness and facilitated in every way the plans for the enjoyment of the afternoon.

At 7 p. m. supper was served at the Veterinary Department, and the business meeting of the society was taken up at 8.15. President Charles L. Colton called the meeting to order in "Leonard Pearson Hall." The roll call was dispensed with and the minutes of the previous meeting (June 15, 1909) were read and approved.

Dr. John W. Adams offered the following resolution which was unanimously adopted:

Mr. President—During the past year we have suffered an unexpected and almost irreparable loss in the death of our late fellow alumnus and colleague, Leonard Pearson, Bachelor of Science, Cornell University, 1888; Doctor of Veterinary Medicine, University of Pennsylvania, 1890; Doctor of Medicine Causa Honoris, University of Pennsylvania, 1908; Professor of Principles and Practice of Comparative Medicine and Dean of the Veterinary School, University of Pennsylvania; Secretary of the Pennsylvania State Livestock Sanitary Board; State Veterinarian of Pennsylvania, occupying with marked distinction at various times during his all too short career, nearly every position of leadership and trust in the gift of his fellow co-laborers, in the zenith of his life with honor and opportunity of greater accomplishments crowding thick upon him, he has been taken from us. He has left enduring monuments of his wisdom and untiring energy in this our own veterinary school which he loved so dearly; in the magnificently organized Pennsylvania system of veterinary control, and more enduring and of vastly greater import, he has lived his strong, pure, hopeful, wholesome, helpful, inspiring life in our midst and impressed his splendid personality upon all who knew him intimately.

The society does hereby gratefully acknowledge its great indebtedness and its profound sorrow and records this slight tribute to our late brother, Leonard Pearson.

E. M. Michener, chairman of the Pearson Memorial Committee, reported that the committee had had several meetings in reference to organizing and planning the form of memorial that would be most suitable to perpetuate the memory of Dr. Leonard Pearson. This committee was appointed last fall by President Colton and is composed of twelve members, seven of whom are alumni and five are members of the profession in Pennsylvania. He stated that it had been considered advisable to solicit contributions from all who had been friends of Dr. Pearson and interested in his work, and for this reason the above additions to the committee were made.

At first the committee had difficulty in deciding the nature and scope of the memorial. At the time the first circular letter was mailed, this point had not been determined. After considering the subject carefully and weighing all suggestions, the committee decided to recommend that an oil painting of Dr.

Pearson should be obtained and that a memorial tablet should be erected to his memory. From the contributions received it was soon evident that considerably more money would be raised than could be used for the portrait and tablet. It was then decided to donate the surplus to the library in which Dr. Pearson had been so much interested.

The most satisfactory plan appears to be to consider such contributions as an endowment fund for a portion of the library to be known as "The Leonard Pearson Memorial Library." The income derived from the investment of this fund is to be used in the purchase of books and periodicals from year to year, and by this means to keep the library replete with all that is newest in veterinary literature, and thus perpetuate the memory of our great alumnus in a form that shall be always fresh and progressive. By this plan the Leonard Pearson Memorial Library Fund will remain open for all time to receive contributions from any source.

Contributions have been received from sixty sources in amounts ranging from two to one hundred dollars each. The total amount received and pledged so far is \$700. There are over 400 living graduates of the Department of Veterinary Medicine, University of Pennsylvania, in practice at the present time. Only about forty of this number have contributed. Many others have promised subscriptions and have shown an interest in the matter, but have been waiting till it was determined in what way the money was to be spent and for what purpose. It is believed that a high percentage of our alumni will contribute to his fund now that the plan has been definitely outlined.

It is the intention of this committee to canvass the medical profession, agriculturists and all who may feel an interest in this matter for contributions, and it is hoped that several thousand dollars may be raised for the Leonard Pearson Memorial Library.

Dr. Michener's report was discussed at considerable length by many of the members. A motion was made, seconded, and regularly adopted to follow fully the recommendations of the committee.

The painting will cost about \$500. Mrs. Elsa Koenig Nitzsche has been selected to paint the portrait. Mrs. Nitzsche is a sister of Dr. August Koenig, class 1893. Her paintings have already attracted much favorable comment in this country and abroad. Some of her portraits decorate the halls in other depart-

ments of the university. Mrs. Nitzsche was personally acquainted with Dr. Pearson, and we feel fortunate in having one so competent to do the work.

Carl W. Gay, acting in the absence of the dean, Louis A. Klein, who is abroad at the present time, stated that he had received authority from the Board of Trustees to name what has previously been called "Alumni Hall," the "Leonard Pearson Hall." Dr. Gay emphasized the power that Dr. Pearson possessed of attracting persons to him, and especially in getting men together for mutual benefit. He spoke of the many pleasant meetings that he had anticipated and the details that he had so carefully planned in the construction of this beautiful hall.

J. D. Cecil, on behalf of the graduating class, presented a tablet to the memory of Dr. Pearson. This is the last class to which he gave personal instruction. The tablet is to be placed in "Leonard Pearson Hall" with the one donated by the class of 1909 to the memory of Claude Bourgelat.

Owing to the non-appointment of a committee on Necrology, the president reported the death during the year of the following alumni: Leonard Pearson, '90; J. Stewart Lacock, '95; J. M. Lawrence, '08; J. B. Taylor, '00; J. W. Thomas, '09; Charles M. Cullen, '87; A. H. Wallace, '97; A. C. Walls, '93; C. J. Woodruff, '03; J. O. Forsythe, '93, and Alexander Mecray, '08.

The secretary was instructed to formulate messages of sympathy from the society and to forward the same to the relatives of the deceased members.

The Library Committee reported, through Dr. Harper, the chairman, that about two years ago, at the request of the society, circulars were sent to the alumni soliciting subscription in behalf of the library. At the 1909 annual meeting he reported the receipt of \$182.50 less expenses. Since that date by approaching the alumni through a selected member of each class he had received \$57, thus making the total alumni subscription for library purpose \$287.50.

In view of the general effort to be made on behalf of the library under the plan formulated by the "Leonard Pearson Memorial Library Committee," it was deemed unwise to have more than one financial appeal addressed to the alumni for library funds, therefore the library committee was thanked for its services and discharged.

The plan proposed for reorganization of the Society of the University of Pennsylvania from the general Alumni Society

was on motion referred to the executive committee for consideration and to report at the next annual meeting.

J. N. Rosenberger, class 1910, briefly reviewed the methods that have been adopted by the undergraduate society. The Veterinary Medical Society of the University of Pennsylvania, to stimulate an interest in its members to take an active interest in its welfare. The plan has worked well. It required that each member of the society of the senior class should present a paper which had to meet with the approval of the executive committee before he was entitled to the certificate of active membership. As a result thirty members of the graduating class had received the customary certificate of the society.

The following resolutions were adopted and ordered to be spread on the minutes and a copy forwarded to Dr. S. H. Gilliland and Dr. Louis A. Klein:

1. The Society of the Alumni of the School of Veterinary Medicine of the University of Pennsylvania hereby conveys to Dr. S. H. Gilliland its congratulation on his appointment to the position of State Veterinarian of Pennsylvania and assures him of its loyal support and confidence in the work to which he has been called.

2. The Society of the Alumni of the School of Veterinary Medicine of the University of Pennsylvania wishes in this resolution to offer to its fellow alumnus, Dr. Louis A. Klein, its warm congratulations on his appointment as dean of the school and to assure him of its willingness to co-operate in every possible way to further the establishment of the school and to promote its interests and influence.

A copy of the 1910 Record was presented to the society by H. Preston Hoskins, chairman of the Record Committee, and was received by S. J. J. Harger to whom it is dedicated.

The election of officers for 1910 and 1911 resulted as follows: President, Robert J. Formad, 1888; Vice-President, Edgar W. Powell, 1900; Historian, S. J. J. Harger, 1887; Secretary and Treasurer, B. M. Underhill, 1895; Executive Committee, J. W. Adams, 1892; Charles Williams, 1887, and J. N. Rosenberger, 1910.

After the adjournment of the business meeting, the society spent an enjoyable meeting singing old and new college songs and indulging in the usual exchanges of experiences and reminiscences.

S. LOCKETT, Secretary.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK CITY.

The regular meeting of this association was held at the Berns Veterinary Hospital, 74 Adams street, Brooklyn, on Wednesday, June 1 at 2 p. m., with the president, Dr. E. B. Ackerman, in the chair. There were twenty-five members and visitors present. The minutes of the previous meeting were read and approved. After some other routine business had been transacted, the members adjourned to the operating room where a fine clinic was held.

Through the courtesy of Dr. Geo. H. Berns and other members of the association, a number of cases were presented for diagnosis and operation. Among the interesting cases offered were the following: Case of azoturia presented by Dr. Berns; usual history. Treatment: Extraction of six quarts of blood from jugular, intravenous injections of four quarts normal saline solution, purgative of aloes. This case was able to get up without assistance on second day and recovery was confidently assured.

Second Case.—Mule presented by Dr. Berns. History: February 12th operated upon for bad quittor; no improvement in lameness for one month. Again placed on operating table and found to be suffering from badly infected varicular bursæ; after second operation animal made speedy recovery, and at this time is working daily without lameness.

Third Case.—Large grey gelding presented by Dr. Berns. History: On February 3d horse fell on street and could not get up. Removed to hospital in ambulance. Put in slings. Could stand properly, but when made to move forward fetlock of right hind leg became flexed and leg dragged forward. When made to back, entire leg seemed stiff. The case at first appeared like patella luxation, but no alteration could be noticed there. Diagnosis made of paralysis of exterior pedis muscle. The leg from hoof to hock was placed in plaster of paris bandage to keep limb fixed; allowed to stay for five weeks. When removed animal showed great improvement. This case was of much interest to many of those present, and Dr. Berns said that in his long practice he had seen but three cases like it.

Fourth Case.—Gelding operated upon for paraphymosis by Dr. Darke about a year ago. Operation consisted of removal of eighteen inches of indurated tissue, including the prepuce.

Penis was then sutured to fascia of sheath. The penis was carried well up within the sheath and operation was highly successful.

Fifth Case.—Bay horse presented by Dr. Ackerman. History: Reported to local Board of Health as a suspicious case of glanders; nasal discharge, no reaction from mallein, agglutination not yet heard from. History of pneumonia in early part of February, but for two months temperature had fluctuated between 101 and 103; unthrifty appearance; brachial lymphatic corded, slight induration of sub-maxillary region, nasal discharge not characteristic of glanders. A vote was taken and the opinion of most of the members was that it was a case of glanders. The autopsy of this animal will be awaited with interest.

Sixth Case.—Black gelding presented by Dr. Darke showed thickening of septum nasi, with nasal polyps and granular growth covering septum.

Seventh Case.—Presented by Dr. Berns; showed a gelding with numerous and large polyps in nasal fossæ.

Eighth Case.—Bay gelding presented by Dr. Cochran, with diseased second lower molar and fistulous opening through the inferior maxilla. Advised trephine and extraction of tooth and curetting of fistular tracts.

Ninth Case.—Bay gelding presented by Dr. Louis Griessman; ambulance horse with high spavin of right hock, lame for one year; repeated blistering afforded temporary relief. Cunean tenotomy recommended.

Tenth Case.—Horse presented by Dr. Berns for quittor operation; animal secured on operating table; anæsthetics, chloral and cocaine locally. Operation technique being a modification of Bayer and Fricke. Dr. Ray Glannett operated, assisted by Dr. Berns, and the work was performed in a neat and skillful manner. Only one incision was made through the coronary band and this at the bulb of the heel. This method obviates possibility of quarter-crack.

Opportunity for discussion was given as each case was presented and the first clinic of this association was declared a success.

Dr. John A. McLaughlin, of Providence, R. I., gave a demonstration of administration of ether, using an apparatus of his own invention. This was an interesting event, the patient, a dog, becoming anæsthetized in a very short time and without the usual struggles.

Dr. F. C. Grenside moved a vote of thanks to Dr. Berns for the use of his hospital and for material presented, and to all other members who contributed to the program by contribution of cases. This was promptly seconded and carried.

The meeting adjourned at 6 p. m.

W. REID BLAIR, Secretary.

VIRGINIA STATE VETERINARY MEDICAL ASSOCIATION.

The seventeenth annual convention of this association was held in Murphy's Hotel, Richmond, Va., January 14, 1910. The roll call showed a larger attendance than ever before in its history. The enthusiasm of the members was noticeable from the very first meeting, and it was quite evident they came with the full determination of making this the best meeting ever held. They did it, too. I think there was not a man present who did not voice that sentiment to his comrades before saying good-bye.

Our annual meeting is the designated time for election of officers, so this constituted the first feature of business. All of the old officers were re-elected, as follows:

President—Dr. S. C. Neff, Staunton, Va.

First Vice-President—Dr. J. G. Ferneyhough, Burkeville, Va.

Second Vice-President—Dr. Chas. McCullough, Howardsville, Va.

Secretary-Treasurer—Dr. W. G. Chrisman, Raleigh, N. C.

Board of Censors—Dr. S. C. Neff, Dr. J. G. Ferneyhough, Dr. Chas. McCullough, Dr. W. G. Chrisman, Dr. H. Bannister, Dr. H. S. Willis, Dr. W. T. Gilchrist, Dr. R. R. Clark.

Examining Board—Dr. S. C. Neff, President; Dr. H. Bannister, Secretary-Treasurer, Roanoke, Va.; Dr. Thomas Frasier, Richmond, Va.; Dr. H. S. Willis, Rappadan, Va.; Dr. J. G. Ferneyhough, Burkeville, Va.

The literary program consisted of several splendid essays, addresses and reports on interesting cases. Dr. Chas. McCullough, formerly of the Agricultural College or V. P. I., also State Veterinarian, gave a splendid essay on "Comparative Study of Ophthalmia."

"Results of Two and One-Half Years' Work in Milk Inspection in the City of Richmond" was carefully rehearsed and explained by Dr. C. E. Levy, Chief of the Health Department.

The State Veterinarian, Dr. J. G. Ferneyhough, gave a very interesting and instructive synopsis of the "Relation of the State to Bovine Tuberculosis."

A most interesting and instructive account of the "Veterinary and Live Stock Sanitary Work in Cuba" was given by Dr. N. S. Mayo, Professor of Animal Husbandry and Veterinary Medicine in the Agricultural College, who formerly had charge of this work.

"The Influence of Influenza Anti-toxine in Distemper of Dogs," was the subject of Dr. S. C. Neff's paper. Dr. Neff in his usually business-like manner gave a very interesting account of his success with this treatment. Having cured one hundred and three out of a total of one hundred and eight patients in twelve months.

Dr. W. G. Chrisman, formerly veterinarian for our Dairy and Food Commissioner, now State Veterinarian of North Carolina, gave an account of "North Carolina's Method of Controlling Tubercular Reacting Animals."

The following gentlemen reported very interesting cases that had come under their observation since our last association: Dr. H. Bannister, Dr. Thomas Frasier, Dr. H. S. Willis, Dr. Charles Epps, Dr. Frasier Smith.

The association adjourned to meet in Norfolk, Va., July 14, 1910. The Examining Board to meet the preceding day. Our entertainment committee has secured headquarters at the Linhaven Hotel.

W. G. CHRISMAN, Secretary.

COLORADO VETERINARY MEDICAL ASSOCIATION.

This association held its semi-annual meeting June 4, 1910, at Denver, Col. The following members answered to roll call: Drs. Chas. G. Lamb, M. J. Nordliffe and C. Wade, of Denver; Geo. H. Glover, B. F. Kaupp, of Fort Collins; Robt. H. Bird and Thos. Quinn, of Greeley; Geo. H. Dickey, Colorado Springs; E. J. Foreman, Trinidad; James Toppin, Pueblo; Fred. Greden, Eaton; A. G. Brocker, Steamboat Springs.

The executive board reported favorably on the application of Vernon J. Ayres, of Sterling, and he was duly elected to membership.

The following applications were submitted to the executive board: Drs. F. D. Hylton, Las Animas; Walter F. Stewart, Trinidad; Edward H. Aicher, Delta; A. G. Wadleigh, La Junta; Gordon McClain, Lamar; J. C. Pace, Calxico, Cal.; C. Schafer, Hugo; W. S. Craig, Montrose; G. C. Shaw, Montrose.

Drs. Chas. G. Lamb, E. J. Foreman and Geo. H. Glover were appointed by the president to draft amendments to the present veterinary law to strengthen its weak parts and present them to the next legislature.

The president appointed Dr. Geo. H. Glover and B. F. Kaupp a committee on resolutions with instructions to draft suitable resolutions voicing the sentiment of the association by condemning the proposed change of the head of the B. of A. I. to the medical profession, and resolutions recommending the United States Congress to pass the Army Veterinary bill before it in regard to the rank of the army veterinarian.

Reports of Disease.—Dr. Geo. H. Glover reported that the college was investigating the diseases of poultry and would render a detailed report later.

Dr. B. F. Kaupp reported the finding of several cases of pernicious anemia around Longmont, Fort Collins and Windsor.

Dr. E. J. Foreman reported many cases of tetanus among the mules of the Colorado Fuel and Iron Co.

The meeting adjourned to January, 1911.

M. J. NORDLIFFE, Secretary.

RESOLUTIONS PASSED BY THE COLORADO VETERINARY MEDICAL ASSOCIATION AT DENVER, COL., JUNE 4, 1910.

Whereas, The Bureau of Animal Industry has reached a high state of proficiency, under the guidance of the Secretary of Agriculture and the chief of the Bureau in Veterinary Sanitary Service, and

Whereas, The present Meat Inspection Service under the Bureau of Animal Industry protects the people from the purchase of diseased meat and from fraud and adulteration of other food stuffs entering the channels of interstate commerce, and

Whereas, The live stock quarantine service under the same bureau has reached a high state of perfection in the control of

contagious diseases among animals, and is successfully co-operating in state veterinary supervision in said work, and

Whereas, The value of this work would be greatly curtailed, being placed in a subsidiary manner as proposed in the Owens bill; therefore, be it

Resolved, That the Colorado Veterinary Medical Association assembled respectfully asks Congress to defeat this bill.

GEO. H. GLOVER,
B. F. KAUPP,
Committee.

MAINE VETERINARY MEDICAL ASSOCIATION.

The quarterly meeting of this association was held at the Bangor House, Bangor, April 13, 1910, at 8.30 p. m., with President Joly in the chair and 17 members present.

The minutes of January meeting were read and approved.

Dr. Bert. L. Pratt, of Caribou, was present as a visitor and his application for membership presented and referred to the Executive Committee for a report at the July meeting.

Dr. F. L. Russell read a very interesting and instructive paper entitled "Horse Breeding in the State of Maine," which was very ably handled and freely discussed by all present.

Dr. A. L. Murch reported two cases of ovariectomy in mares in his practice and much discussion followed.

It was voted that our association send a representative to the meeting of the Live Stock Breeders' Association at Waterville, April 14, 1910, and our president, Dr. Joly, agreed to represent the association.

It was the unanimous vote of the association that we indorse the name of Dr. Joly for reappointment by the Governor on the Board of State Veterinary Examiners, and a notice be sent to the Governor to that effect.

It was voted to hold next meeting in Portland, July 13, 1910, with papers by Drs. W. S. Lord, W. H. Lynch, W. H. Robinson and I. L. Salley. Meeting adjourned at a late hour.

C. L. BLAKELY, Secretary.

MASSACHUSETTS VETERINARY ASSOCIATION.

The twenty-sixth annual banquet and meeting of the Massachusetts Veterinary Association was held at Young's Hotel, Bos-

ton, Wednesday evening, April 27, 1910. Dr. Madison Bunker, the president, called the meeting to order at 5.30 p. m., twenty-nine members being present.

The minutes of the March meeting were read and approved. Moved by Dr. Perry and seconded by Dr. Paquins that three members of this association be appointed as delegates to the September meeting of the A. V. M. A. at San Francisco.

It was moved and seconded that the May meeting be held at the Massachusetts Agricultural College at Amherst, Mass.

Dr. Harry N. Kingman was elected a member of the Association.

A committee was appointed by the president to bring in a list of names for candidates for office for the ensuing year.

The nominating committee presented the following names: For president, Dr. Madison Bunker; first vice-president, Dr. A. S. Cleaves; second vice-president, Dr. W. M. Simpson; secretary-treasurer, Dr. J. H. Seale, all of which were duly elected.

The secretary-treasurer's report showed the association to be in good standing financially, with a total membership of seventy-eight.

Directly following this meeting, twenty-nine members and eight guests sat down to dinner. Among the guests were Drs. Gill, Blair and Kingston, of New York City, and Dr. Daly, of Lawrence, Mass. Dr. Austin Peters acted as toastmaster, and at the finish of the report called upon each of the above-named gentlemen to speak. Drs. Frothingham, Winchester, Babson and Mahoney also spoke.

J. H. SEALE, D.V.S., Secretary.

YORK COUNTY VETERINARY MEDICAL SOCIETY.

This society held its meeting in the National Hotel parlor, York, on Tuesday, June 7, 1910, with a large attendance of members. Secretary E. S. Bausticker gave an interesting account of an acute case of tetanus in a horse that had been under his care recently and which recovered. Among other subjects discussed by the members in attendance were the following: Tuberculosis in cattle, congestion of the lungs of horses, pneumonia, strangles and paralysis in cows during pregnancy, and the best treatment for each.

The next meeting will be held in this city on Tuesday, September 6, 1910.

E. S. BAUSTICKER, Secretary.

LAWS GOVERNING VETERINARY PRACTICE.

Corrections received after June number went to press.

STATE.	Preliminary Education.	Professional Training.	Licensing Tests.	Registry.	Executive Officer and Address.	Administrative Board.	Remarks.
Colorado.	No requirements.	Graduation from recognized school.	Examination by State Board	License recorded in office of clerk of the county.	W. W. Yard, Secretary, Denver.	State Veterinary Medical Board.	
Michigan.	No requirements.	Graduation from recognized College.	Diploma from recognized Veterinary College, having a course of 3 yrs. of 6 mos. each.	With Secretary State Board.	S. Brenton, Acting Secretary.	Mich. State Vet. Board.	Reciprocity of license.
Rhode Island.	None.	None.	Recognized school and examination.	State Board.	J. S. Pollard, Providence.	State Board of registration.	

Dr. W. H. BOYNTON, Instructor in Pathology in the New York State Veterinary College, has just left for the Philippine Islands, where he has accepted the position of pathologist of the veterinary service. Dr. Boynton spent three years in the University of California and then came to Ithaca to study bacteriology. He decided later to take the veterinary course and since his graduation in 1908 has been retained as an assistant and instructor. He has done some very excellent work in connection with diagnosis of glanders and rabies and at the present time had important investigations in connection with these diseases under way. While in the University of California he was a student of Dr. A. R. Ward, who was recently made chief veterinarian of the Philippines. In Dr. Ward's investigation of rinderpest and other animal diseases of the Islands it was necessary that he should have the services of an experienced laboratory man in pathology. Dr. Boynton sails on June 28 from San Francisco on the steamer *Siberia* for Manila.

NEWS AND ITEMS.

Dr. H. E. KINGMAN was busily engaged in tuberculin-testing the cows of Ft. Collins, Col., during May.

Dr. B. F. KAUPP has recently been investigating swamp fever in the neighborhood of Colorado Springs, Colo.

MISS ELEANOR McGRATH, class of 1910, was the first lady to receive the degree at the Chicago Veterinary College.

DRS. IRA WATTS, J. C. Pace and Rex Van Sickle, all of the class of 1910, Veterinary Department, Colorado Agricultural College, successfully passed the recent Philippine examination.

Dr. B. F. KAUPP will be busily engaged investigating the diseases of poultry in Colorado during the summer. He and Dr. Geo. H. Glover tuberculin-tested the dairy cows of Leadville, Col., during the early part of June.

PROF. H. D. GILL, of the New York-American Veterinary College, has been winning some races at the matinees during the month of June on the New York Speedway, and incidentally benefiting his usually good health. We believe the Doctor has discovered the spring of immortal youth in his trotting horses.

Dr. THEO. F. KREY called at the REVIEW office the first week in June, when spending a few days with his old friends and neighbors, who are always glad to see him. While in New York the Doctor had the opportunity of attending the June meeting of the Veterinary Medical Association of New York City, and witnessing an unusually good surgical clinic.

Dr. ANGUS MACINTOSH, of Perth, West Australia, called at the REVIEW office the second week in June, having visited England on his way to America. He was about to visit Chicago, Detroit and other western cities, then return to New York and sail from that port to France on his return home. He is accompanied on his trip by his wife and little daughter. The Doctor

has traveled extensively during his life, is a very earnest veterinarian and extremely interesting conversationalist.

THE TWENTY-SEVENTH ANNUAL COMMENCEMENT OF CHICAGO VETERINARY COLLEGE.—The twenty-seventh annual commencement of Chicago Veterinary College took place in the auditorium of the Central Y. M. C. A., 153 La Salle street, Chicago, Tuesday evening, April 5, 1910.

The scene in the auditorium that evening, before the exercises began, was a gay one. A large audience, consisting of friends, wives and sweethearts of the graduates, filled the boxes on either side of the stage, the parquet and overflowed into the galleries. Favors of red and white roses were presented, with illuminated programs, to ladies as they entered the hall. The stage was bedecked with American and College flags and flowers. To one side of it, on a stand, awaiting the recipients, was an orderly pile of diplomas. In the centre of the front of the stage was a table containing the medals of honor and other prizes, while a huge bunch of flowers, roses, carnations, tuberose, surrounded by ferns and smilax, peered from a vase in the centre of the table. In the front of stage, on either side of the table, great bunches of roses, sent by admirers to graduates, reposed, setting off the stage and exhaling precious odors.

On the stage were seated all the members of the college faculty, Professor W. L. Williams, of Cornell University, and Rev. J. B. Shaw, D.D., LL.D., pastor of the Second Presbyterian Church, Chicago.

After music by the orchestra and the invocation by the Rev. Dr. John Balcom Shaw, Dr. Joseph Hughes, president of the college, gave his presidential address. He dwelt briefly on the history of the college and the increments which have made it successful as a teaching institution. He pointed out the various achievements of the college, its fruitful production of men who attained to the highest government positions open to veterinarians, to the perhaps at least equally arduous work of success in all forms of private practice. He complimented the graduating class on its record, and, turning to the assembled faculty, expressed his appreciation of their energies exercised in behalf of the students. Following him, Dr. A. H. Baker, dean of the college, made a short speech, in which the degree Doctor of Comparative Medicine was officially conferred upon the candidates present.

In accordance with custom the new graduates filed across the stage, the name of each recipient of a diploma being spoken aloud, with the new title, as each passed by the president.

The degree of Doctor of Comparative Medicine was conferred upon 138 men.

Dr. Maximilian Herzog, Professor of Pathology, was master of ceremonies in the distribution of medals and prizes. The doctor, besides being an ardent investigator of disease, is in leisure and social hours much of a humorist. Each of the prize winners came in for a joke upon himself, from the jovial master of ceremonies, before the prize was safely in his hands. This frightened away dullness from the scene and kept the audience either smiling or uproarious.

Sixty-five competitive prizes were distributed.

Dr. Joseph Hughes then said he was pleased to read the honor list. As the name of each man on the honor list was read he arose and bowed, according to custom, to the faculty and to the audience. Thirty-one gentlemen merited a place on the honor list.

Then came the presentation of the framed group-picture, containing the photographs of each member of the class with those of the members of the faculty in the centre of it. Inasmuch as the class graduating was so large this year, the group-picture was unusually large. A graceful speech, on presentation of the picture to the college was made by the class president, Dr. W. L. Hollister.

In response, on behalf of the faculty, Dr. E. L. Quitman made many felicitous remarks in which he congratulated the class on its success, referred to its deportment and its honorable membership. In closing he promised, in thanking the class for the picture, that it would hang in a prominent place in the college.

Dr. W. W. Arzberger, of the graduating class, then delivered the valedictory address, which was unusually well prepared, well delivered and well received. Lack of space forbids our reproducing it. The final address of the exercises was made by one of the most stirring and fluent preachers in Chicago, the Rev. John Balcom Shaw, D.D., LL.D., pastor of the Second Presbyterian Church.* It was a speech notable for its literary flavor, its strong manly sense, its appeal to the mind and heart, its appreciation of the value of the modern veterinarian to the community. After Dr. Shaw's speech, the Illinois Quartette, which had interspersed vocal music throughout the evening, closed the exercises with the reposeful, nocturnal song "Sunset."

* Published in this issue of the REVIEW.



OFFICERS OF THE AMERICAN VETERINARY MEDICAL ASSOCIATION, 1909-1910.

1—President A. D. MELVIN, Washington, D. C.

2—First Vice-President E. A. A. GRANGE,
Toronto, Can.
3—Second Vice-President J. H. MCNEIL,
Columbus, Ohio.
4—Third Vice-President G. H. GLOVER,
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5—Fourth Vice-President JAMES ROBERTSON,
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6—Fifth Vice-President A. T. KINSLEY,
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7—Secretary R. P. LYMAN,
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8—Treasurer G. R. WHITE,
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9—Librarian W. L. WILLIAMS,
Ithaca, N. Y.

AMERICAN VETERINARY REVIEW.

AUGUST, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, June 15, 1910.

ROBERT KOCH.—As I am writing this chronicle, a man has just died, at Baden-Baden from complications of arteriosclerosis at the age of 67, whose name is intimately connected with the great scientific progresses that for the last thirty years have modified part of that great science, medicine.

ROBERT KOCH, indeed, has been one among the first who have contributed to the laying of solid foundations upon which to-day bacteriology is built.

Born in 1843, Robert Koch studied medicine, and from the beginning of his professional life, gave himself to the study of infectious diseases. Anthrax is the first that takes his attention and soon he discovers the spores that Delafond had failed to recognize. He shows the possibility of contamination by the intestines. He introduces in bacteriology the use of solid media for the cultivation and separation of microbes.

In 1882 he announces his discovery of the bacillus of tuberculosis, and soon by his tuberculine, gives a process of positive diagnosis of the disease.

He then goes to Egypt and India to study Cholera, and then adds another laurel to his glorious crown by the discovery of the

coma bacillus, the causal agent of the dreadful disease. Those are the principal titles, but how many more?

Grand, indeed, have been the scientific works of Robert Koch. True the great expectations which were anticipated at the many presentations or announcements of his various tuberculines did not realize—true, the opinion that he advanced, held and defended at the various congresses of London, Paris and also Washington were errors which he failed to see—but with all that, scientists all over the world, will acknowledge that with Robert Koch's death disappears one of the great names of our day. He has been the most illustrious bacteriologist of Germany, the one that some of his admirers have attempted to compare and oppose to Pasteur. But to say that with Davaine and Pasteur, he was one of the founders of bacteriology is certainly the most just and highest compliment that can be paid to his memory.

* * *

SUMMER SORES.—In the May issue of the *Revue Generale*, Mr. Drouin, late assistant professor at Alfort, wrote a thorough review on "Granular Dermatitis," the summer sores, which, like all that this gentleman writes, is very interesting. After some concise generalities relating to the climacteric influences and those of the seasons, which promote the presence of this dermatose, the question is put: are summer sores an univocal and well defined pathological affection. Bouley, Rivolta and Laulanié have established the fact of the presence of a parasite in the granulations. It is the *Filaria Irritans*. But where does it come from? Is it an adult individual or an embryo? For Raillit it is only a larva, not a completely developed helminth! It is very difficult to obtain a perfect individual. Fayet and Moreau have, however, and from their studies they consider it an adult individual. Huguier has found filaria free in the blood of horses, and he claims that they are identical to those of granular sores, and although Lingard in his study of the parasites of horses' blood has found embryos comparable to the

filaria irritans, experiments carried out by both of these investigators were negative, and yet it seems certain that at a certain period of its development the parasite must exist in the circulatory apparatus. The fact that a summer sore will appear suddenly, without any primitive traumatism, and again that in animals carriers of a first lesion, a second may also develop without apparent cause in another spot of the body, are proofs of it. And again at the autopsies of horses, carriers of filarian sores, the lungs have been found invaded with granular lesions which were well observed and described by Nocard and Drouin, and have allowed to affirm that the parasite of granular sores was susceptible to circulate in the blood to reach the lungs and form embolies.

How does it enter through the skin? Probably by a local inoculation from some insects, bites of flies flying about swampy grounds. Drinking water has also been accused, but it is not likely to be so. The common flies are probably the true agents of the propagation of the filariosis. They attack any kind of wounds, specially the summer sores, then they rush upon others, simple wounds, slightest cutaneous excoriations and after a few days those become granular with all their well known characteristic aspect and their peculiar manifestations of spreading, necrosed structure, prurit, etc., etc. As long as the parasite of summer sores is only an embryo, to what species does it belong in its adult form? Researches are still wanted to settle that question. For Megnin, it is the larval form of the *Oxyuris Gurrula*. Railliet advises searching in the life of *Filaria Equina* or among the *Sclerostoma* or the *Spiroptera*. For Fayet and Moreau it has no relation with the *filaria reticulata* of the suspensory ligament.

* * *

After these general considerations, Mr. Drouin arrives to the consideration of the question of the various therapeuties that have been recommended against this rebel affection.

The prophylaxy is quite difficult. Hygienic measures are the only ones available. Watch the condition of the wound, use freely tincture of iodine, keep the flies away, etc. But even with those precautions summer sores will develop.

The review of the curative modes of treatment is extensive. Of course, the internal administration of some drugs has been tried. Arsenic and iodide of potassium principally. If of no great advantages for the sores themselves, they, and principally arsenic has given good results in building up the condition of some debilitated individuals. But as Drouin says, having no means to permit the parasite to be reached through the general circulation, local applications is the proper indication of treatment.

Prevent the animal from scratching or biting himself, which is too often very difficult to realize. If possible keep the animal at work. Protect the wound with pitch plaster, adhesive dressing, acetate of lime paste; wadding bandages are advised by some and objected to by others.

And then comes the application of antiparasitic and antiseptic preparations, the escharotics, the injections directly in the middle of the lesions, the actual cauterization, and surgical interference. Among all those that have been tried, used, recommended and failed may be mentioned: continued irrigations, ether or chloroform sprays, the icebag, naphthaline, formol of Van Es, heated guaiacol, iodosol, permanganate of potash, boric acid, salicylic acid, solution of sublimate, picric acid. The injections of permanganate of 2%, those of iodo-iodurated solution of bicarbonate of soda, and of antistreptococcic serum have also been tried. Potential cauterization with orpiment, biniodide of mercury, salts of copper, caustic paste of Liénau, etc., etc., and finally the cauterization with actual cautery in points, or better the excision of the diseased tissue. And as in many instances, a large cicatrix remains, likely to interfere with harnessing, autoplasty is then necessary so as to render the animal useful.

The treatment by excision is the one that Drouin seems inclined to prefer, and no doubt many like us, would endorse his views in many instances.

* * *

CHRONIC BRONCHITIS OF HORSES.—In the *Scheizer Archives* Prof. Gruter has published on this subject a contribution which is analyzed in the *Annales of Bruxelles*.

After reviewing the veterinary bibliography at his disposal, Gruter studies a special form of chronic bronchitis which he has observed in several horses. They most all belong to animals reformed for chronic and incurable respiratory disease. This form of bronchitis follows an exposure to cold but may also often occur without an apparent cause. The general condition is disturbed, temperature is up to 40° C., pulse 80 and respiration between 50 and 60. The mucous membranes are injected. At first, there is a nasal purulent discharge, which later becomes grey; auscultation reveals in the inferior parts of the lungs some crepitant and whistling râles, and here and there the vesicular murmur is either diminished or abolished. This febrile period is short, lasting four or five days, when then the affection assumes a chronic character. The temperature and cardiac functions return to normal but the respiration remains accelerated; .25 per minute at rest. It is not jerky or double, as in ordinary heaves, and the respiratory functions are neither deep or difficult. Projection of the anus is never present. The wings of the nostrils are very mobile and dilate widely with the slightest exercise. The cough is frequent, strong and dry. It occurs often by spasms and gives rise to severe dyspnea. When the disease is chronic, the nasal discharge disappears. Percussion reveals no pulmonary lesions, auscultation indicates only a diminution of the vesicular murmur. This condition lasts for weeks, but the animal does not get well. It is important to differentiate between dry and ordinary bronchitis, which so often ends in emphysema. At the beginning this differentiation is difficult as the specific signs appear only later. While in dry

bronchitis, the respiration is only accelerated, it is markedly double in the emphysematous horse. In this last, the cough is dry and difficult, while it is easy, although dry also, in dry bronchitis. In this again, there is seldom a nasal discharge, while in an emphysematous animal there is almost always one, specially after work. Thoracic râles are also more abundant and easier to hear in the emphysematous. At any rate the increase in the size of the lungs in this last, renders the percutable portion wide, while the hepatic dullness is pushed more backwards. These last manifestations are missing in dry bronchitis.

* * *

At post mortem, one finds that in dry bronchitis the lungs are depressed, the coloration is normal: the pulmonary tissue is elastic and may here and there show some small spots where this elasticity is reduced. These spots are found in the thickness as well as on the surface of the pulmonary structure, they are irregular in their outlines and firmer and heavier than the normal tissue. When the lungs are taken out of the thorax and are percussed, they give a normal sound except in the diseased spots where there is a dull sonority. In animals sick only since a short time, the spots above alluded to, have on sections a greyish red coloration, and in old cases this coloration is yellow or even white. Recent lesions allow, on being squeezed, a greyish red liquid escape, with, from the fine ramifications of the bronchia, a greyish clot. White spots give no liquid when squeezed, although the fine bronchia are obstructed by contents similar to those of recent lesions. Seldom are lesions of the large bronchia found; bronchiectasie is missing. Pulmonary pleura is normal, the bronchial glands somewhat swollen, but never with softening. With these exceptions the pulmonary parenchyma is but little altered and is free from emphysematous pouches.

The microscopic examination reveals lesions which are against the name of dry bronchitis as it demonstrates that the diseased

bronchia contain a rather abundant product of secretion and for this reason Gruter prefers the name of SCLEROSING BRONCHITIS and ALVEOLITIS to that of dry bronchitis.

In conclusion, Gruter says that besides chronic bronchitis which brings on emphysematous lesions, there is another form which differs from it by its clinical and anatomical characters. Although this other form gives rise to a lasting dyspnea, it does not promote lesions of heaves but indurated centers in the pulmonary tissue, due to interstitial inflammatory lesions with marked proliferation of the connective tissue, destruction of the alveolar epithelium and occlusion of the alveoli. It is probable that this form of bronchitis develops under the influence of agents with specific action upon the connective tissue and the alveolar epithelium.

* * *

INTESTINAL CONGESTION IN HORSES.—Every practitioner knows of this ailment, which attacks horses so suddenly and is classified among the diseases of the digestive canal as a morbid entity, well characterized to the clinical point of view by the excessive injection of the mucous membranes and the severe abdominal pains that are manifested by the violent colics, which generally are observed in animals, overworked by excessive labor. Very commonly fatal, the lesions that are found at post mortem are characteristic and described as follows by Petit: "They consist in being located in and more particularly affecting, the cæcum and colon. These are of a dark and red color with the mucous membrane disorganized and transformed into a blackish red clot. The liver looks like as it had been cooked, the spleen is enlarged, soft and black on section. The insertion of the blood vessels of the intestines is surrounded with a bloody exudation, sometimes quite abundant. At times, however, it is upon the stomach or in the small intestines, together or separately, that lesions are found. The urine is more or less highly colored or perhaps with a coffee tint; the heart is yellow and easily torn; the left endocardium is covered with sub-serous hemor-

What could be the causes of such serious diseases have evidently been the question that pathologists have endeavored to settle. And actually there are two propositions existing concerning the etiology of intestinal congestion in horses. The first, originated by Bollinger, recognizes thrombosis of the colic arteries as the cause. The thrombus being formed by a clot organized in a verminous aneurism of the great mesenteric artery. In the second, MM. Petit and Lingnieres say that it is impossible to explain the genesis of the lesions in any other way than by the action of a microbial toxin. Lingnieres indeed placing in the intestinal mucus the origin of this toxic secretion which he attributes to a microbe, yet not discovered.

Prof. Carrè not endorsing these theories and continuing the researches that he had been making on the Preisz-Nocard bacillus and diseases of sheep has finally recognized the specific agent of intestinal congestion of horses, and presented the result of investigations before the Academie des Sciences, which were resumed concisely in the *Revue Generale* of last April, viz.: to the effect that the examination of the reports of autopsies made of sheep that had died from acute cachexia, red ailment or toxin of Preisz-Nocard bacillus proves the absolute identity of the lesions found then with those that are made in horses, dead because of intestinal congestion.

At first Mr. Carrè had been unable to obtain with certainty the seat of culture of the microbe by looking into lesions from sheep dead with the natural disease. But later he had two lambs sent to him in a dying condition. They were killed, and in them all the characteristic lesions were found and pure cultures of Preisz-Nocard bacillus obtained with blood taken from the heart. Then in succession Mr. Carrè had at his disposal, four horses suffering with violent colics of intestinal congestion. These were bled at the jugular, and their blood used for cultures in bouillon. Two horses recovered. The others died having the typical lesions of intestinal congestion in the digestive canal and in the heart. Cultures of Preisz-Nocard bacillus were also obtained with their blood.

From these Mr. Carrè concludes: 1. Intestinal congestion of horses is not a disease of the digestive canal; it is a general infection of the organism due to Preisz-Nocard bacillus and the lesions observed are due to a toxine secreted by the microbe; 2. The name of intestinal congestion is altogether improper, as the intestinal lesions may be altogether very slight or even be entirely absent, the toxic action being manifested only upon the stomach or the heart.

* * *

TRANSMISSION OF TUBERCULOSIS BY INHALATION.—This question has already been discussed many times, and whether it is settled at last remains a question. However, the following extract of the experiments of Kuss and Lobstein recorded in the *Bulletin Medical* may prove of interest.

Recalling the recent investigations that have been made in relation with the contagion of tuberculosis, they compare the two theories, that of the respiratory and that of the digestive entrance and notice several of the contradictions existing between those that have made the experiments.

On one side, Tappeiner, R. Koch, Cadeac, Preyes, Cornet, Nocard, Flugge consider direct inhalation as the ordinary mode of infection; while again, Behring, Chauveau, Vallee, Calmette and Guerin, Willemin, Petit and Laudet, Hartl and Neumann, Weichselbaum and Bartel accuse ingestion, if not exclusively at least in a predominant manner. Kuss and Lobstein try first to know the value of the means of defense of the aerial tracts in the physiological condition and to this effect, they experimented on guinea pigs; they show as evidence the facility with which the fine atmospheric dusts reach the pulmonary alveoli, and they demonstrate the exclusively aerogenous origin of the physiological pulmonary anthracosis and of the pneumoconiosis. Again they show that the fine droplets of the atmosphere are also easily and directly inspired, way in the finest ramifications of the respiratory tree, contrary to the opinion advanced by Saengen of Magdeburg.

Further on they demonstrate that a bacilliferous spray must be made of exceedingly fine droplets for inhalation to succeed; animals must be prevented from licking the surfaces upon which the bacillus may be deposited, as otherwise instead of inhalation it would be ingestion that would take place; neither will animals be allowed to stand under the direct spray of the atomizer; the inhalation must be of short duration, and while thus experimenting other tests of ingestion should be carried on simultaneously. Chauveau has told Kuss and Lobstein a way to carry an experiment. Two guinea pigs inhaled together from half a liter of a volume of air, in which a given quantity of human tuberculous culture is atomized. To carry parallel experiments of ingestion, other pigs are fed with a mash of carrots carrying pulverized virus; 34 guinea pigs were used in the experiments.

The results of the INHALATION have been generally a pulmonary tuberculosis of exceptional severity; hepatic and splenic lesions not secondary; mesenteric lesions were always slow to develop; from 33 to 50 days, while the pulmonary were observed after 14, 9 and 10 days, with spleno-pneumonia rapidly fatal. Cervical glands had lesions sometimes.

Experiments of INGESTION were as rigorously carried out as those of inhalation, but with doses of bacilli much larger. Notwithstanding all, with one exception, remained harmless. The only diseased pig had only mesenteric lesions.

Such was the balance compared between infection by ingestion and by inhalation.

In other experiments 11 guinea pigs took with their food doses of human tuberculous bacilli, doses varying between one-half a centigram and 100 centigrams. None of them became tuberculous. Again 14 other animals were given with oesophageal probang from 5 to 100 centigrams of human bacilli; two only had mesenteric, hepatic and splenic tuberculosis, and one of those slight secondary pulmonary lesions.

Experiments with subcutaneous injections were less successful than those by inhalation.

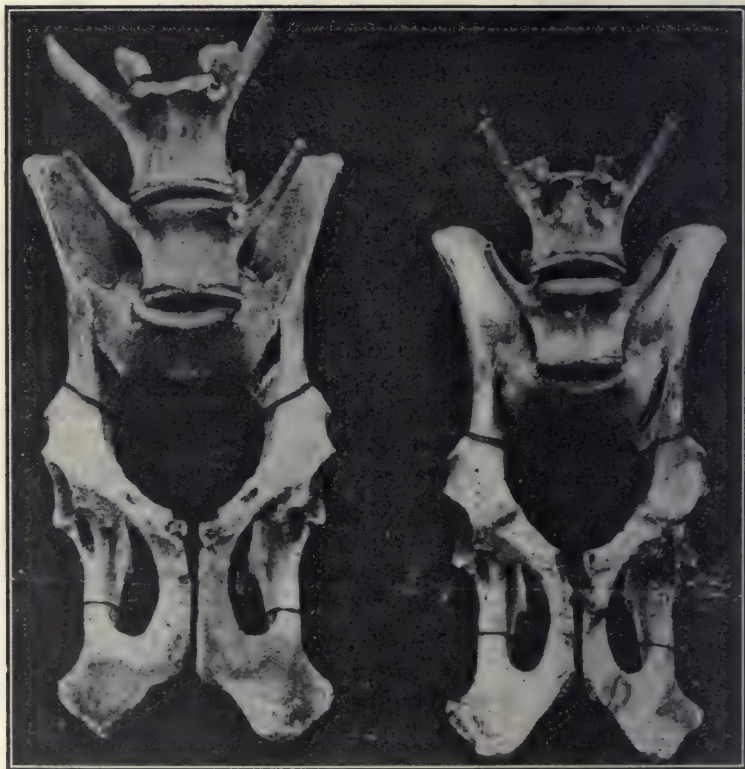
CONCLUSIONS. 1. Inhalation, infects the organism by direct penetration of the bacilli in the pulmonary alveoli; 2. It constantly gives rise in guinea pigs to tuberculosis which develops rapidly; 3. Ingestion of an equal quantity of bacilli is generally harmless; 4. Tuberculosis by inhalation appears first and primitively under the form of pulmonary infection; 5. Transmission of experimental tuberculosis takes place much more easily by way of respiratory than digestive entrance.

* * *

THE PHYSIOLOGY OF THE THYMUS GLAND.—Our knowledge on the physiological action of this gland is far from being complete, notwithstanding the enormous amount of experimental researches which are recorded in scientific papers. But the results of these experiments, which have principally consisted in removing in animals the thymus gland or in destroying it either with X-rays or specific thymotoxic serum, have not always given identical results. Possibly because, the condition of the experiments have not been the same in all cases or the species of the animal differed or perhaps possibly their age. However, there has been recorded lately some which were made upon animals of a same litter, very young, and at a period of life where the gland possesses the maximum of its functional activity; and which have permitted to add a valuable document upon the physiological action of the thymus. The experiments that I allude to have clearly demonstrated that in animals in which the thymus has been removed, the process of growth is kept back and manifested by a diminution in the weight of these animals comparatively to that of witness animals of the same age.

This difference in weight appears from the first days after the operation and reaches its maximum in about one month later. It is so much more marked as the operated animal is younger. For instance, when the operated animal weighed 735 grams and its witness 745, the difference after 23 days was not over 230 grams. In another experiment made upon 3 rabbits,

having respectively weights of 540, 543 and 564 grams, the difference in these weights compared with those of witnesses, made one month after the operation, was from 300 to 400 grams. And again if very young rabbits were used for the experiments, the



On the right, pelvis of a rabbit, whose thymus glands have been removed; on the left, the witness.

differences that were observed to be, between 6 weeks and 2 months after the operation, were relatively considerable and varying between 450 and 600 grams. However, this difference in the weight is often only temporary and passes away later, the operated animal regaining back its own weight, and even gaining beyond that of the witness.

That there is a moment of arrest in the growth principally, if not exclusively upon the skeleton is very evident. The changes in the bones consisting in a single reduction in the size and dimensions as shown here.

The bones look delicate, their normal projections and crests for muscular insertions are less marked and appear smaller. Their curvatures are not changed, and their intimate structure, studied with radiography, presents no noticeable alterations, except a slight degree of thinness in the canals of Havers. Analysis shows that the quantity of lime remains normal and the hardness of the bony pieces does not seem altered. These modifications are particularly more marked in some special bones, such as the lumbar vertebrae, the pelvis and the shoulder. They remain such even in operated animals or also go beyond that of the witness. To resume, these last experiments have shown that the thymus, while playing during the first years of life a part in the general executions of the functions of the organism, has not the importance of the other vascular glands, and its removal or disappearance in young animals do not interfere with their ultimate development.

* * *

ONCHOCEREAS.—Under that name, in 1841, Diesing created a gender for a nematod parasite discovered by Bluiveiss of the Veterinary Institute of Vienna, and was found in the coats of the collateral artery of the cannon, and in the suspensory ligament of the fetlock of horses. This parasite was afterwards classified as the gender *Filaria* or the *Spiroptera*. But recent works from Railliet and Henry have demonstrated that *Onchocereas* ought to form a special gender of the family of the *Filarideas*.

Animals of this gender are characterized by their thick cuticle striated crossways and strengthened outwards by spiroid or ring-like thickenings, wider apart in females than in males. This last has two unequal spiculae and caudal papillae often symmetrical, but always with a group of four papillae surrounding the

cloca on each side. Females are very long, with a spiroid body, a vulva situated near the anterior extremity. They are viviparous.

These parasites are found in the elastic and fibrous tissues and in subcutaneous on intramuscular connective structure of mammalia.

According to Railliet and Henry there are five well known species:

1. *O. RETICULATA*, which lives in the suspensory ligament of the fetlock, the tendons of the flexors of the foot, the coats of blood vessels and the subcutaneous connective tissue of the region of the tendons in horses.

2. *O. CERVICALIS* found in the cervical ligament (*Ligamentum nuchae*) of horses. It is rather common.

3. *O. ARMILLATA* occupying the internal face of the middle coat of the aorta of cattle, zebu, and buffaloes, in India and Sumatra.

4. *O. FASCIATA*, discovered in the subcutaneous connective tissue of the head of a camel in Punjab.

5. *O. VOLVULUS*, extracted from the subcutaneous fibrous nodules of man in occidental Africa.

According to Prof. Neumann, however, there is another species to which he has given the name of *Onchocerea Gutturosa* on account of the peculiar cervical dilatation of the body and of which specimens had been sent to him from Algeria. It seems that the parasite is not rare among Algerian and Tunisian cattle, and that it is always found on the cervical ligament, on a level with the second and third cervical vertebrae. There are small tumors from which it is difficult to extract them. Similar conditions have already been described in cattle of various countries, they are frequent in Australia and in Java; and as generally animals do not seem to be disturbed by them it is only at post mortem that their presence is detected.

Onchocerosis has been observed in animals of all ages, in subjects varying between two and three years. Their meat is perfectly safe to use. The etiology of this disease is yet unknown, but it is supposed that, as is the case in filariosis, the disease is transmitted by sucking insects. The study of the entire subject

is only at its beginning. Other researches are necessary to complete it.

* * *

PREPUTIAL DISCHARGE IN DOGS.—In several numbers of the *Il Nuovo Ercolani*, Prof. Cinotti has published the long and serious series of studies that he has made of this somewhat frequent, although simple affection of dogs. He has given a thorough study of the sheath of dogs, and principally of its lining, mucous membrane, which covers the free portion of the penis, and which is principally free from glands structure but which is very rich in lymphatic follicles. The author has also carried a large number of experiments in relation to the contagious character of the discharge, its transmissibility and nature, and closed his remarks with conclusions which are of great interest.

Conclusions.—1. The preputial discharge of dog is due to a chronic purulent balanopostitis, kept up by common pyogenic agents, whose virulency is neutralized or greatly attenuated by the presence in abundance of existing lymphatic elements, of various forms, in the internal laminae of the prepuce and extremity of the penis.

2. To the common pyogenic agents are associated others of indifferent forms, not only the bacillus subtilis, which perhaps in the peculiar condition where it is, may acquire a pathogenic power, yet limited.

3. Infection of the parts takes place with facility by the entrance of the micro-organism in the preputial cavity, through the external orifice and after passing through the bone are carried to the penis in total or in part when it is brought to the uncovered part of the sheath.

4. The infection is frequently renewed, and the morbid state is kept up in its chronicity as long as a favorable condition of dampness and heat are met with by the micro-organism in the preputial sac.

5. The disease has a benignant character, and is not transmitted experimentally from dog to dog, except very rarely. It is ordinarily cured spontaneously, and is not transmissible from

male to females, because either from the attenuated virulency of the microbes of the material of the discharge or from the special condition of organic protection of the vagina of the slut.

6. The benignity of the bacterian flora is not represented in its constituents, but is due to the special condition and antivirulent action of the lymphatic secretion (respectively lymphocytes), which is secreted in the preputial sac.

7. The relative and temporary efficacy of the recovery is independent of the facility of reinfection and specially from the peculiar conditions of the intimate structure of the membrane lining the inside of the prepuce and of the penis, which by their condition render difficult the application of drugs upon the micro-organisms in the folds and more especially the sinuosities of the papillar body of these membranes.

A. L.

* * *

ON TO SAN FRANCISCO.

The excellent program of the forty-seventh annual meeting of the American Veterinary Medical Association published in this month's issue of the REVIEW, under society meetings, bears out the REVIEW's forecast of many months ago, that "the approaching meeting of the American Veterinary Medical Association at San Francisco would surpass the expectations of its most sanguine advocates," and gives evidence of the unceasing efforts of its able secretary and members of the local committees to make it the success that is now assured. For what greater assurance of the success of a meeting can be had, than the enthusiasm with which its members enter into the making of the program! It not only indicates the great amount of enthusiasm in the coming meeting from the four quarters of the universe from which the program is made up, but the program itself attracts others to a realization of the great scope of the organization, the importance of the subjects dealt with, and the fact that the leaders in the veterinary profession, men of national and inter-

national fame are among those most earnestly engaged in the work. In addition to the assurance of success deducted from the dimensions, character and scope of the program proper, the opportunity of seeing the great country west of "Rockies," visiting some of the famous cities of the North West under the favorable conditions offered through being a part of the convention, and, finally, of visiting beautiful California at a time when pleasant and familiar faces of friends and neighbors are seen on every side, and the city of San Francisco welcomes you as one of its own, are all factors that lead to the conclusion that the A. V. M. A. convention of 1910 makes an opportunity for every veterinarian in America to visit the Pacific Slope under conditions that are not likely to be presented to him again in his lifetime.

To the great number of veterinarians who have realized that fact, and are planning to take advantage of this opportunity, we desire to call attention once more to the great advantages of traveling on a special train. One that will be made up of cars with the most luxurious type of railway equipment; sanitary standard sleeping and compartment-observation Pullman cars. Your own baggage car, in which no one's baggage but those of your own party will be carried; a dining car in which you will feel at home because in it you will meet no one except an A. V. M. A. conventionist. A train *exclusively* for the members of the A. V. M. A., their families and friends.

To each one of you gentlemen, we desire to say, that it lies entirely with yourself whether you travel thus exclusively, or go in a special car or cars on a regular train. You have probably decided already that the special train is an ideal way of traveling and that you will be glad indeed to go that way; but unless you write Secretary Lyman *at once* and tell him you want to be a member of the party going by the special train that goes out of Chicago 6.15 p. m., August 30, he cannot arrange for the special train in advance. It is essential that he have an expression from a hundred members of their intention of going by that train before he can secure "a special."

Five hundred may be at Chicago on the evening of August 30, desirous of going by special train and enjoying its comforts and privileges, but it cannot be arranged unless at least a hundred of them have expressed their desire to travel that way beforehand. Write *your* letter *now* on receipt of this number; do not even chance delaying until the next day, you may forget it. Secretary Lyman's address until he starts for the convention is P. O. Box 901, Hartford, Conn. HURRAH FOR THE AMERICAN VETERINARY SPECIAL!

* * *

PAST PRESIDENT OF A. V. M. A. DECORATED BY KING GEORGE.

Dr. J. G. Rutherford, the most recent past president of the American Veterinary Medical Association, who presided over the 1909 meeting at Chicago with such dignity, and who caused the creation of an International Commission for the Study of Methods of Control of Bovine Tuberculosis, which had its birth at that meeting, was among those honored by King George on the occasion of the birthday honors bestowed on June 23, when our distinguished confrère was created a C. M. G. (Companion of St. Michael and St. George), in recognition of the distinguished services rendered the Dominion of Canada as head of the veterinary branch of the federal department of agriculture. This is an honor conferred upon few, and we congratulate Dr. Rutherford in the name of the veterinarians of America.

THE NEW YORK STATE VETERINARY MEDICAL SOCIETY will hold its annual meeting at Ithaca the fourth week in this month, Thursday, Friday and Saturday, 25th, 26th, 27th. The outlines of the program were published in the June REVIEW. Since then a number of additions have been made; and, with the excellent clinic *always* furnished by this society, it offers attractions to the veterinarians of New York and neighboring states that foretells a large gathering on the campus at picturesque Ithaca.

ORIGINAL ARTICLES.

RABIES AND ITS METHODS OF CONTROL IN NEW YORK STATE.

By J. F. DeVINE, CHIEF VETERINARIAN, DEPARTMENT OF AGRICULTURE.

Rabies or Hydrophobia, which of late has exacted considerable attention in this State, is by no means a disease of recent origin since it seems to have been recognized as a distinct disease before the Christian era. Aristotle wrote of this disease in dogs as follows: "Dogs suffer from madness. This induces a state of fury, and all animals which they bite, when in this condition, become also attacked by madness." Other early writers who refer to this disease are Virgil, Horace, Plutarch and Ovid.

In the first century Cornelius Celsus recognized this disease in man and called it Hydrophobia. The first appearance in this country seems to have been in the latter part of the eighteenth century, but literature of older countries goes to show that this scourge visited different localities of such countries at different periods for the past twenty centuries, with evidences of its specific character.

NATURE AND CAUSE.—The nature and cause of this disease, like many other specific diseases, were confusing and misunderstood by scientists and investigators until after the middle of the eighteenth century, when leaders in medical and biological sciences (Pasteur probably standing out most prominent of these), determined its specific character. It is regrettable, however, that many laymen still look upon this disease with doubt as to its being specific. It is still more regrettable that this doubt

is, in most cases, probably directly or indirectly due to the expressions of such physicians and veterinarians who have not been brought face to face with the dreadful phenomena of this disease. We, however, must expect such opposition until time puts the sciences of biology and bacteriology on a more firm footing.

When we consider that there are still some physicians who doubt the specific character of small pox and scarlet fever, simply because the bacteriologists have been unable to isolate and point out the specific organism which causes these diseases, then we are not surprised that there would be some disbelievers in a disease that has not been, in any comparison, nearly as prevalent as the two just mentioned. The organism of rabies is probably one of the so-called ultra microscopical organisms. Still it has been proven beyond a shadow of a doubt by experimental inoculation, that it is specific in character.

Again medical men will state that they do not believe that there is such a thing as rabies since they have been in practice for perhaps 15, 20 or 25 years and have never seen a case. This argument is equally as wanting in logic, since it is very probable that the same medical men would need to admit that they have never seen a case of glanders or leprosy in the human family, and I doubt if they would argue that there are no such diseases.

Any one particularly desirous of seeing an individual affected with this awful malady could very probably do so any year by getting in touch with laboratories where this disease is treated.

Again, some are of the opinion that the disease may arise spontaneously, and that it is liable to crop out at any time under peculiar and favorable conditions. This opinion is probably greatly due to the indefinite period of incubation as well as the number of inoculated animals that may be left in the wake of a dog during the maniacal stage; particularly if much of its furious march has been made during the night when the owners and care takers of animals would be resting in their beds while their property was being attacked. It would be as ridiculous to believe, with our present knowledge of bacteriology and pathology, that rabies could arise spontaneously, as it would be to believe

typhoid fever, tuberculosis or any of the other specific diseases would develop spontaneously; or as it would be for us to believe that we could grow a field of wheat if we did not sow wheat or grow a field of corn if corn were not planted.

Rabies is a specific, communicable disease, which can be communicated to all mammals by inoculation with the specific virus. This specific virus is present in the saliva of animals affected with the disease, and is transmitted to other animals and persons usually by a bite. It may, however, be transmitted through the saliva without a bite, if there is an abrasion, in the same manner as any other inoculable disease.

Rabid virulence has also been observed in the upper renal capsules, in the urine, spermatic fluid and lymph. It has been stated by Friedberger and Fröhner that the blood is never virulent. The possibility of its being transmitted through the placenta seems to have been established by several observed facts and by few experimental results. This question, however, is yet under investigation. Perroncito and Curito have succeeded in infecting a guinea pig by inoculation of the spinal marrow of a young rabbit which was the offspring of a rabid mother.

A point which is of distinct interest to us seems to have been settled by Nocard, as he states he has "never succeeded in transmitting Hydrophobia by the digestive tract, and even after animals have at different times ingested considerable quantities of virulent nervous matter." Among the experiments which he has made upon this subject, the following is particularly interesting: "Within two months a young fox had eaten, without becoming infected, the brain and spinal cord of twelve rabid dogs. He was, however, not refractory, and had not acquired immunity, for later he died from Hydrophobia, which was inoculated by trepanation." (By making a small opening through the skull into the brain.)

Galtier admits the possibility of infection by the digestive passage, by ingestion of saliva, milk or meat coming from a rabid animal, but no fact has yet been established that ingestion of rabid milk or meat has ever produced the disease. How-

ever, the intra crania inoculation of milk has given positive results.

The apparent lack of danger of milk or a product which might be manufactured therefrom, through the digestive tract, would seem a point of knowledge of particular advantage to us since the veterinarian is frequently asked as to the danger of these products where a bovine animal develops rabies during the period of lactation.

The idea is quite prevalent that dogs are particularly liable to go mad during the so-called dog days which extend from the first of July to the middle of August. They are called dog days because they cover the period of time when the dog star Sirius is above the horizon with the sun, and of course, have no connection with the disease whatever. All who have made any observation on rabies know very well that the time of the year or the climatic conditions have little or no influence on the disease, other than that in extreme cold weather a rabid dog on his march would not be as liable to come in contact with as many of his own kind, since the latter would be more apt to be seeking shelter during such weather. This is equally true during the season of deep snow, a rabid dog becoming exhausted much quicker and not being able to travel nearly the distance that he could in pleasanter weather.

PERIOD OF INCUBATION.—The period of incubation is very uncertain in its duration. It rarely, if ever, appears by natural inoculation in less than 12 days, although it has been produced by inoculation of fixed virus in a rabbit in six days, and it may extend from such a short duration to the period of a year or more. The usual period, however, in a dog is from three to six weeks. This variation in the period of incubation is indeed one of the serious drawbacks in controlling the disease and preventing its spread when once introduced in a territory. The location and character of the bite in the human family has been found to influence materially the period of incubation. Since it is now pretty well agreed upon that the virus travels along

the course of the nerves rather than by means of the blood current, the nearer the point of inoculation is to the nerve centers the shorter the period of incubation. To illustrate, we know positively that an inoculation or a bite about the face or head is always attended with a much shorter period of incubation than one on the extremities. We also know that the severer the inoculation or bite, tearing into the muscles and extending deeper on the nerve structures, the surer the infection and the shorter the period of incubation. Helman states that "Hypodermic inoculation gives more numerous positive results in emaciated animals than in those in which the integuments are well covered with adipose tissue."

SYMPTOMS AND DIAGNOSIS.—Symptoms differ slightly in different animals. We will take the dog as a subject. In symptoms we recognize two forms of the disease, one known as the Furious and the other as the Dumb or Paralytic, which, however, usually succeed each other in fully developed cases; yet the furious phenomena may be entirely omitted and again the victim may die in the early furious stage so that the paralytic stage does not appear.

The prominence of the one form or another probably depends greatly upon the location of the point of inoculation, the character of the injury and the virulency of the virus. The premonitory symptoms are in the main the same in both type. Fortunately if we are familiar with the disease it often enables us to recognize it before the period of extreme danger.

It is well to impress upon the public the fact that the name hydrophobia is a misnomer in the dog, and that it is absolutely erroneous to believe that dogs would not go near water, since it is not an uncommon thing to see such an animal ford a creek and readily attempt to drink. While the symptom of fear of water is usually a marked one in the human subject, it is never present at any stage in the dog. Even after the animal's throat becomes completely paralyzed the animal will attempt to drink water.

The symptoms of the Furious form are briefly as follows:

FIRST STAGE.—Change of disposition and habit. This is perhaps one of the most constant symptoms we have. A dog that has been particularly playful and affectionate is apt to become indifferent or sullen. A house dog that has been accustomed to caresses and attention will probably seek seclusion in dark corners under a couch or table and the like. Dogs that have been what we term out of door dogs or indifferent in nature show as decided a change in disposition in courting attention or something equally as noticeable. There is also apt to be a morbid appetite, searching and scratching about, licking cold stone or metal, gnawing at the point of inoculation if it be in a region that can be reached with the mouth, hideous howling, baying at the moon, melancholy, hopeless expression of countenance and perhaps not exhibiting up to this time any disposition to bite. Another symptom which is particularly noticeable when present is the change in voice. Different writers have tried to describe this change, and we convey some idea when we say that it is possibly a half bark and half howl or cry of distress. Any or all of these symptoms may appear during what we term the first stage of the Furious form.

The second or maniacal stage is ushered in by more pronounced manifestations of the above symptoms, everything becoming gradually and greatly exaggerated; insomnia, restlessness and delusion, watching and snapping at things. The infected animal may now be excited into a fury by annoying it or shaking a stick at it. A pretty reliable test ordinarily at this stage is the bringing of another dog into its presence, which is quite apt to make the rabid animal act very furious. As the disease advances there is more and more of a haggard appearance. The eyes become reddened and even a careless observer will note the dejected look. The disposition is now of a wandering character. The animal wanders off long distances, perhaps 10, 20 or 30 miles and snapping as it travels at man or beast. If not interfered with on its tramp or if exhaustion or death does not overtake it, it is quite apt to return. In its wanderings

the tendency is to attack every dog in sight without much warning, growling or barking, and it is peculiarly characteristic that when attacking a dog it does so slyly and not with the ordinary noise of the fighting well dog. It shows no great desire to fight, but exhibits more of a feeling to snap at and worry another dog for a minute and then go on. It seems to have a preference for biting dogs rather than other animals or persons. In other words, it might deviate considerable from its course in order to attack another dog, but is not likely to do so to attack a human being. It is even probable at this time that if it were in reach of its master's voice, that its action could be controlled to a limited degree, depending upon the discipline the dog had been accustomed to. It is not an uncommon thing to see a confined rabid dog, even in the maniacal stage, very much soothed and quieted by a visit from its master.

The premonitory stage and maniacal stage have perhaps consumed a period of from two to five days and in the course of a day or two more, or occasionally less, the disease advances into general paralysis or what is termed the Paralytic Stage, and death.

DUMB OR PARALYTIC RABIES.—The striking peculiarity is an omission of the preliminary furious stage as the disease merges into paralysis after the premonitory symptoms. These cases tend to immediate prostration and weakness and dullness or stupor. Paralysis of the masseter muscles and dropping of the lower jaw seems to be, perhaps, one of the most notable symptoms after the first stage. From this the paralysis extends to the hind limbs and then to the forelegs and trunk. The dog has a decidedly haggard look with the lower eyelids drooping, lying quiet and helpless until relieved by death, which comes usually in two or three days.

It will be seen from the study of these symptoms that the dog which has acted perfectly well and suddenly acts strangely, perhaps falling down and frothing at the mouth, etc., is not the mad dog but is far more apt to be affected with epilepsy or some

similar benign complaint, and it is equally as important to note with care the strange action of any and every dog in any district where rabies is prevalent or where there seems to be a possibility of infection.

POST MORTEM.—In rabies there are no absolutely characteristic post-mortem findings. The stomach has perhaps more significance than any other organ examined with the naked eye. The mucous membrane of this organ is frequently congested, and in some cases marked inflammation is present. Foreign bodies, as sticks, straw, coal, stones, etc., are sometimes present, and an absence of food, coupled with an authentic history would strongly indicate that death had been due to rabies. Closer observations sometimes reveal meningeal congestion; or redness of the pharynx or larynx. Again a negative post mortem with a history of rabies is always suspicious.

LABORATORY DIAGNOSIS.—Microscopical examination has recently largely superseded animal inoculation. The latter method, while of great value when carried on carefully, has the serious disadvantage of delay. Microscopical examination of the nervous system had its origin in 1875. Babes in 1892 discovered what have since been called Babes Tubercles. In 1900 Van Ge Huchen and Nelis described changes in ganglionic cells, being most marked in the plexiform ganglia which meant much to the medical world in the age of rapid diagnosis of rabies.

In 1903 Negri of Italy described what are now known as Negri bodies. The constancy of these bodies found in the hippocampus major and the association of these bodies with rabies has been confirmed by many investigators. Moore of Cornell states that "if these bodies are not the cause of rabies they are surely a specific degeneration resulting from the disease."

METHODS OF CONTROL.—Since rabies is almost always caused by a stray dog which suddenly appears in a community biting dogs and other animals, perhaps persons, the only method of merit known to-day to prevent the spread of this disease is confinement and seclusion or muzzling the dogs in the exposed territory. To

show what an effective remedy muzzling is, it is interesting to note the data furnished by Great Britain. In that country the number of rabies cases reported for each year during a period of twelve years is as follows:

Muzzling Not Required.

1887, number of cases, 217

1888, number of cases, 160

1889, number of cases, 312

Muzzling Required.

1890, reduced to 129 cases

1891, reduced to 29 cases

1892, reduced to 38 cases

Muzzling Not Required.

1893, number of cases, 93

1894, number of cases, 248

1895, number of cases, 672

Muzzling Required.

1896, number of cases, 438

1897, number of cases, 167

1898, number of cases, 17

1899, number of cases, 9

a reduction, as will be seen by statistics in the period of four years, from 1895 to 1899, from 672 cases to 9 cases, and I understand by this method the disease has now been completely stamped out. This has proved positively that dogs are the greatest carriers of rabies and by controlling the dogs we control the disease.

METHODS IN NEW YORK STATE.—When the presence of a supposed rabid dog is reported in a locality, such report is immediately investigated. If the animal has died or has recently been killed, the brain is taken, and, if in a fit condition for examination, is sent to the State Veterinary College at Ithaca, where an examination is made. If the Negri bodies are found, the case is reported positive to the one sending the brain, if such person is known or if the container has been properly marked, and a

similar report is also sent to the Department of Agriculture. If no Negri bodies are found, animal inoculation is resorted to for verification.

The question of the necessity of a quarantine is immediately investigated, which depends somewhat upon whether or not other animals have been bitten or exposed. The method pursued for getting such information is by communicating with the Local Health Officer and the Assistant Commissioner of Agriculture having jurisdiction over that territory; and if the facts warrant it, upon their recommendation the Commissioner of Agriculture immediately lays quarantine upon such area as seems advisable.

Chapter 352 of the Agriculture Law, as amended, reads in part as follows:

If the commissioner shall lay a quarantine upon a city or any portion thereof, he may call upon the Commissioner of Public Safety and the Police Department of said city to enforce the provisions of any notice, order or regulation which he may prescribe within the quarantine district, and all expenses so incurred in enforcing the quarantine shall be a city charge. If the commissioner should quarantine any town, village or district other than a city, he may call upon the sheriff, under sheriff or deputy sheriff to carry out and enforce the provisions of any notice, order or regulation which he may make. All expenses so incurred shall be a county charge.

As soon as it has been determined that a quarantine is necessary for public safety, notices are at once printed and sent to the proper officials for posting. Such notices state in part:

"First—That within this district all persons who own, have charge of or harbor dogs, shall so seclude, confine or muzzle such dogs as to make it impossible for such dogs to bite or inoculate other animals or persons. If a muzzle is used, it must cover the mouth.

"Second—That no person shall take or assist another to take a dog outside the limits of the above described district, and that all persons within the above described district shall take such precaution as may be necessary to prevent such dog from going

or being taken outside the limits of the above described district and as may be necessary to prevent the spread of the disease of rabies.

“Third—That any dog found in violation of this order and seized and confined under the provisions of the state law shall be cared for in a humane manner and not released to any person except upon a written order from the Commissioner of Agriculture or his duly authorized agent.”

The notice also reads, in part, that “the Agricultural Law provides that any person may catch or confine, or cause to be caught or confined, any dog found within the quarantined district during the pendency of this quarantine, in violation thereof; that if a dog which has been seized and confined is not found to be affected with the disease known as rabies, it may be released to the owner upon the payment of \$10.00; that if such penalty is not paid within three days after such dog is seized and impounded, or if it is impracticable, after reasonable effort, to catch and impound such dog, any person may kill or cause such dog to be killed.”

While these notices are being printed and posted, the authorities in all the respective communities are advised by the Department of Agriculture to employ all possible measures to ascertain what, if any, animals have been exposed to contact by the rabid dog or animal, having all such animals at once destroyed, and if not destroyed to have them so confined and secluded for a period of at least one year, that should they develop rabies, it would be impossible for them to inoculate other animals or persons. If a person has been bitten by a positively rabid dog sufficiently serious to suspect the possibility of inoculation, and should ask our opinion as to the advisability of taking Pasteur treatment, we would gladly give such opinion, but this is a matter of advice which ordinarily should come from the local health officer or the family physician.

There is a point which we wish to advise positively on, and that is that in many cases where a person is bitten by a dog that to all appearances is normal, the one thought seems to be to have

the dog destroyed, some taking the precaution to have the brain examined, others caring or knowing nothing about a microscopical examination, simply believing that if the dog's life is ended, the possible danger of hydrophobia developing in the one bitten is removed. This, indeed, is a serious mistake, and we do not advise the destruction of the dog for many reasons. It is the custom of the Department, when we receive word that anyone has been bitten by a dog, to immediately procure the dog and confine it in a thoroughly safe kennel for observation. It is observed daily for at least twelve days, and if, at the end of that period no symptoms of rabies are exhibited, the person bitten need have no apprehension of the bite causing the disease, since, from the most recent experiments by many (notably Nicolas), the saliva has never been found to be virulent more than eight days prior to the development of symptoms in the dog. Therefore by holding the dog under observation for twelve days, we are taking safe precautionary measures. No known case is on record where a human being has developed rabies after such precautions have been taken. If, at any time during the period that the dog is under observation, it shows even symptoms of a positively suspicious character, it is at once destroyed and the brain promptly sent for an examination. Another advantage is that had the dog been immediately despatched, and its brain sent for a microscopical examination, and the examination proved negative, animal inoculation would then be necessary for further verification, which would mean at least two weeks suspense to the one having been bitten, before an accurate diagnosis can be made. Another very important point to be remembered is that those doing laboratory work tell us that to get the most positive results with the rapid methods of diagnosis, it is essential that the animal be allowed to die naturally with the disease or be destroyed only after the symptoms have appeared. While it is true that the Negri bodies are present much earlier in the disease than the changes in the ganglia, still the failure to find Negri bodies in a dog's brain that had not yet showed symptoms of rabies might be misleading, as

well as the finding of such bodies in the brain of an animal which, at the time of death, seemed in perfect health. But even if, upon the examination of a brain prior to the appearance of the symptoms, the case is pronounced positive, the dog, at the time of death, showing absolutely no symptoms, it does not seem to me that, with our present knowledge of the disease, we are justified in putting a poor parent to the expense or subjecting a frightened child to the ordeal of the Pasteur treatment. Had the dog been held for proper observation, the necessity or the non-necessity of this could have been determined positively.

PREPARING A BRAIN FOR EXAMINATION.—The next very important question is the proper preparation of the brain for examination. It is very essential that the brain reach the laboratory in a condition fit for a rapid diagnosis, because, if it is not it will be necessary to resort to animal inoculation, and there are cases on record where the disease has developed simultaneously in inoculated experimental animals and the individuals bitten.* Always remember that if a brain is badly mutilated either by shooting the animal in the head, as is sometimes done, or by a careless removal of the brain, it causes a delay at the laboratory to get the brain in proper condition to examine, if it can be examined at all. This, of course, is equally true of a brain that is badly decomposed. In cold weather probably the safest way is to cut off the head and forward it in toto to the laboratory; but during hot weather such a procedure cannot be considered safe, even though it is packed in ice. Perhaps the most satisfactory method is to remove the brain carefully and put it in a jar containing pure commercial glycerin, having enough of glycerin to immerse the brain wholly, then packing this jar or container carefully in a box and marking plainly and sending by express to the New York State Veterinary College at Ithaca. Examinations are made there without charge to the sender, which is indeed an advantage which I fear is not appreciated by all of us as much as it should be.

* Moore.

STATISTICS COMPILED TO APRIL 1, 1910.—At the present time rabies exists in sixteen counties, and this department has rabies quarantines in two villages, seven cities and fifty-one townships. There have been, during the entire year, 103 towns, fifteen cities and eight villages under quarantine, located in twenty-nine different counties.

STATISTICS FOR THE YEAR 1909.

	Towns.	Cities.	Villages.
Quarantines laid and raised in the year 1909 to date.....	42	5	2
Quarantines laid in the year 1909 and still in force.....	61	10	6
Total	103	15	8

(The above places were located in twenty-nine different counties of the state.)

During the years 1908, 1909 and 1910 to date our records show that 105 persons have been bitten by rabid animals, of which twelve have died; ten horses bitten, of which five have died; sixty-eight cattle bitten, of which fifty-four have died; fifty-four sheep bitten, of which thirty-eight have died; eleven swine bitten, of which ten have died. This list, as you will see, does not include the hundreds of dogs that have died of rabies or have been killed because of showing symptoms of the disease, as well as the number that have been exposed, and might have developed the disease, had they not been destroyed as a matter of precaution. The statistics relative to deaths from rabies in human beings were obtained from the New York City Department of Health.

Statistics from the New York State Veterinary College show that during the year 1908 the total number of examinations made for the diagnosis of rabies was 315, of which 188 were positive, 94 negative and 33 undetermined. Similar data for the

year 1909 shows 583 examinations, 283 of which were positive, 260 negative and 40 undetermined.

PASTEUR TREATMENT.—While the functions of the Department of Agriculture are to control infectious or contagious diseases of domestic animals, still we are constantly receiving inquiries as to the merits of the Pasteur treatment and where and how it can be procured. As to its efficiency, suffice it to say that the Pasteur treatment has reduced the mortality of those bitten by rabid animals from 16 to 20 per cent. to a fraction of 1 per cent.

As has been mentioned, in those cases where the bites are about the arms or face the period of incubation is much shorter and the mortality is much higher, having been estimated by different writers anywhere from 50 to 80 per cent., since the treatment requires from two to three weeks, and it is considered that at least two weeks are necessary after treatment is completed for the height of immunity to be established. Therefore, all deaths that occur during the course of treatment or within two weeks after should not condemn the treatment, but should be considered as cases in which the treatment is not applicable, the period of incubation being too short for the virus to have the desired effect before the symptoms appear.

This class of cases has caused faithful investigators to try to improve upon our present methods. Experiments with what is termed a simultaneous method, which consists of injecting the serum from an immune animal and a strong virus at the same time, is reported as giving good results in a few cases after the symptoms have appeared. This, however, is purely in the experimental stage and should not be commented on in any way positively until more is known about it. The present method is a daily sub-cutaneous injection of a virus, which is a graduated dose of an emulsion of spinal cord of a rabbit which has been inoculated with rabid virus and allowed to develop the disease, the spinal cord then having been treated by a process to control its virulency, beginning with a very mild virus and injecting with a stronger one each day until say from 14 to 21 injections have

been introduced, depending upon the estimated seriousness of the infection. There are institutes which are prepared at all times to administer this treatment, and it is also well to know that the treatment can be furnished from the Health Department of New York City by being sent daily to the local health officer or the family physician, thereby making it possible for the patient to be treated at home. The law still further provides that for those needing treatment, and who are too poor to pay for it, the county shall take charge and pay for such treatment.

Bauer* has given us his observation on 447 fatal cases of human rabies, and I herewith append them as the periods of incubation are instructive. Of these cases there died after the bite in from

12-25 days.....	33	persons.
26-30 days.....	27	"
31-35 days.....	35	"
36-40 days.....	35	"
41-50 days.....	71	"
51-60 days.....	40	"
Over 60 days.....	206	"
<hr/>		
Total	447	"

As will be seen by statistics here furnished, New York state has suffered from a severe epidemic of rabies during the past two or three years, and that if we are to stamp out this disease as they have in other countries, we will all need to co-operate and follow the system that has been adopted by countries which have been successful in handling the disease until a more simple and better method can be determined later, if possible.

DR. G. ED. LEECH is attending the summer short course at the Kansas City Veterinary College, getting a few new ideas along the lines of his special work, "milk and meat inspection."

* Moore in reprint from *New York State Journal of Medicine*, February, 1900.

THE PREVENTIVE DOSE OF TETANUS ANTITOXIN FOR THE HORSE: ITS RELATION TO THE AMERICAN UNIT.*

BY DR. A. PARKER HITCHENS, GLENOLDEN, PENNA.

In its etiology and pathogenesis tetanus perhaps is better understood than any other infectious disease. The poison or toxin, produced by the tetanus bacillus growing locally, attacks the nervous tissue and causes the painful contractures and other symptoms which characterize the disease. In other words, the symptoms of the disease are dependent directly and solely upon the toxin elaborated by the tetanus bacillus, and to prevent these symptoms it would seem necessary merely to prevent or inhibit the action of the toxin.

In the antitoxin, first prepared by Behring and Kitasato (1890) (1), we have a substance which will unite with tetanus toxin and render it harmless. It was believed at first that to cure the disease it would be sufficient to introduce into the body enough antitoxin to neutralize the toxin present therein. Further experience, however, has demonstrated that antitoxin in the quantities ordinarily given is practically powerless to influence the course of the acute disease because (1) at the time symptoms appear there is present in the body an enormous and rapidly increasing quantity of toxin; and (2) a firm combination exists between the toxin and the nervous tissue which antitoxin cannot disturb.

It is my object in this paper to present proof (1) that in the doses customarily used, tetanus antitoxin is a preventive agent of real value and (2) to ascertain the efficient dose expressed

* Read at a meeting of the Keystone Veterinary Medical Association, Philadelphia, Tuesday Evening, May 10, 1910.

in American units. To further this I have collected clinical and experimental evidence from foreign and domestic sources as reported in the literature. Some clinical observations and experimental work of my own tend to confirm the general conclusions.

CLINICAL REPORTS.

German.—Reck (1901) (2) of the German army, states that although tetanus is very common in the neighborhood of Frankfurt a/M, the preventive use of antitoxin has never failed him.

Hutyra and Marek (2nd ed., 1909) (3) say that the results are always perfect.

Richmann (1909) (4) says that in the stables of one of the large German antitoxin manufacturers, the horses receive every six weeks an immunizing dose of tetanus antitoxin. While tetanus was rather a frequent occurrence before this practice was instituted, there has not been a single case since. According to him the experience of veterinarians in Germany is the same.

French.—In France the evidence in favor of tetanus antitoxin as a preventive agent is conclusive. The magnificent work of Nocard was probably responsible for its early widespread prophylactic use in that country. Its popularity is attested by the fact that while in the last four months of 1896 (when its use began), 1,511 doses were used by veterinarians, and in the twelve months of 1897, 14,657; the number had risen in 1901 to 47,096 (Nocard & Leclainche) (5), while in 1906, according to Vailard (6) 87, 264 doses were used.

According to Nocard and Leclainche (3d ed., 1903) (7), the prevention of tetanus following traumatism is assured with certainty by serotherapy. Nocard collected observations on 3,088 animals (of which 2,708 were horses) injected preventively after an operation or wound. A first group comprises 2,500 animals inoculated immediately after operation. A second comprises about 600 subjects treated one, two and four days and more after the wound. In this total a single case was seen—a horse treated five days after the wound. The disease was benign, and the animal was well within twelve days. During the

collection of these figures 314 cases of tetanus (220 horses) were noted in animals not treated.

Labat (1902) (8) reports that among 706 animals wounded or operated upon, not a single one which had been treated with tetanus antitoxin contracted tetanus. Among those which were for some reason not treated, three got tetanus. Labat believes it advisable to use a second injection, but because they left the infirmary soon after operation, almost all cases reported received but a single injection. This sufficed.

Nandrin (1903) (9) says, speaking of its prophylactic value, "the efficiency of tetanus antitoxin is not to-day contested by anyone."

Huguier (1909) (10) has recently started a discussion in France as to the *number* of injections necessary to be given to a horse. He says that all text books advise the use of a second injection—the first to be given as soon as possible after the traumatism, the second eight or ten days later. When, at one time, on account of a scarcity of serum he was forced to economize, he gave only one injection. Noting that all animals thus treated were apparently protected, he continued the use of a single dose of 10 c. c. Although he has been stationed in Africa, which is notoriously favorable to the development of tetanus, he has not had a single case. In reporting this experience, Huguier asked if other veterinarians had had similar results.

Affirmative replies were not slow in coming.

Dieudonne (1909) (11) publishes an interesting table showing by years the number of deaths which have occurred in his practice from tetanus after operation. None of these received antitoxin. A single preventive injection is considered sufficient and has always proved adequate.

Chapellier (1909) (12) has for ten years used only one injection. In more than 500 castrations he has not seen the slightest symptom although his region is far from being free from tetanus.

Labat (1909) (13) up to 1902 gave two injections as a matter of principle but, as reported in an earlier paper (*vide supra*)

only about ten per cent. of his cases remained under observation long enough to receive the second dose. Since 1902 he has used only single doses. Fifteen hundred operations and wounds of various kinds have not been followed by a single case of tetanus.

Pecus (1909) (14) uses a second injection when the wound tends to last a long time. He works in a tetanus infested region, but has not had a case of tetanus in 1,500 wounded animals; the injuries of 500 were caused by street nails.

Encouraged by the quick and favorable response to his paper (quoted above), Huguier was led to consult various veterinarians and veterinary medicinal societies in order that he might assemble as much evidence as possible concerning the technique adopted in the current practice of preventive serotherapy against tetanus in the horse. This work was presented to the Société Centrale of Paris, by M. Jacoulet (15) on March 3d of this year. Huguier gives the names of the societies and individual veterinarians he has consulted—names which one meets frequently in French veterinary literature.

Of those consulted by him, a great number reside in countries reputed to be badly infested with tetanus. All declare that a single preventive injection suffices in current equine practice, provided it is administered very soon after the operation or traumatism. Not one of them has ever seen tetanus appear after such a procedure and their observations reach to thousands of cases.

In his search through the literature, Huguier has found recorded but nine failures. These are reported in the *Recueil D'Hygiene et de Medecine Veterinaire Militaires*, from 1900 to 1908. The nine cases reported are divided into seven groups of observations; six of these must be eliminated from consideration because there is no mention made as to the length of time between the accident and the injection.

Although I have looked up all the other references given by Huguier and have noted the more important above, I have been unable to find in this country the journals in which these failures are reported.

In commenting on these three failures, Huguier remarks what an insignificant figure this is in comparison with the 3,088 successes of Nocard (1895 to 1897), the 13,829 successes reported by Labat, and by Vaillard with the co-operation of Vallee, and finally in comparison with the 10,000 successes communicated to Huguier by civil and military veterinarians, without counting the thousands not published.

American.—In America, Pearson (1897) (16) says that tetanus can be prevented with great certainty by the use of antitoxin, and adds: "My attention was recently called by Dr. Walters, of Wilkesbarre, to a mine in Dauphin County wherein there were almost one hundred mules, and of these twenty-three died of tetanus during a period of two years. In January five or six dies. I obtained some tetanus antitoxin, which was administered to fifty mules that occupied the stables in which tetanus had previously appeared. Since that time no case of tetanus has been reported."

MacFarland and Ranck (17) report the systematic immunization of the horses in a stable used for the preparation of antitoxins. In 1897 when no special precautions against tetanus were taken, the death rate was 8 per cent. In 1898 tetanus antitoxin was used, but not systematically, and on account of its low value the doses were extremely small. The death rate during this year was 10 per cent. In 1899 all horses were immunized systematically and the death rate was reduced to one per cent.

The records of this laboratory show that the antitoxin used even in 1899 was of very poor quality. The exact strength cannot be ascertained, but it was the practice to use antitoxin too weak to place upon the market.

A hitherto unreported experience in the stables of this firm is particularly interesting. Tetanus had been eliminated from the stables by the prophylactic use of tetanus antitoxin, notwithstanding the fact that the serum used was very weak in strength. In the winter of 1906 it was suggested that probably the injection into the diphtheria horses of serum from other horses might in some way interfere with the ability of the former to produce

diphtheria antitoxin of high value. In order that this point might be decided, the quantity of tetanus antitoxin used for immunization was greatly reduced until only 5 c. c. was injected every two months. As a result of this two horses died of tetanus in rapid succession. Larger doses of antitoxin were administered to all the other horses immediately, and monthly injections have been continued ever since. It seems needless to state that no case of tetanus has occurred since that date.

Besides the reported experiences in America which are very meagre, I have communicated verbally with a number of veterinarians in this vicinity, and have yet to hear of a failure of tetanus antitoxin to immunize the horse, when the antitoxin has been injected soon after the traumatism.

Furthermore, I have been told officially by one of the manufacturers of tetanus antitoxin in this country that during twelve years there has not been received a single letter from any veterinarian complaining that a dose of tetanus antitoxin used by him failed to immunize the animal.

SUMMARY OF CLINICAL EXPERIENCE.—The results of clinical experience in the preventive use of tetanus antitoxin in Germany, France and America prove its efficiency in equine practice beyond question.

EXPERIMENTAL EVIDENCE.—Nocard (1897) (18) reports a series of experiments which show the great preventive value of tetanus antitoxin.

On March 9th at 10 A. M. he injected 14 horses with dry tetanus toxin. Each animal received six milligrams under the skin of the neck.

The controls became tetanic—one on 14th, the other two on the 15th. Seven others treated either at the moment of the appearance of the first symptoms, or only 24 or 48 hours before, contracted a fatal tetanus. The last four resisted. Of these four

One received 10 c. c. Pasteur Institute serum one hour after the injection of the toxin—never the slightest symptom.

One received 20 c. c. Pasteur Institute serum 24 hours after the injection of the toxin. No symptom.

One received 30 c. c. Pasteur Institute serum 48 hours after the injection of toxin. Slight symptoms.

One received 40 c. c. three days after. On the morning of March 14th this horse was certainly tetanic. The same day at 10 o'clock he was injected with 75 c. c. serum into the jugular vein. He finally recovered.

If the extreme severity of this experiment is taken in consideration, viz., the dose of toxin, always fatal to witness, having been injected all at once and immediately absorbed, one can affirm that in daily practice there will be a great many chances to arrest the evolution of tetanus or to prevent its appearance, by interfering even several days after the traumatism. But one must well know that the more the interference is delayed, the greater the dose of serum to inject must be.

My own experiments which are reported below offer further evidence of the preventive value of tetanus antitoxin.

DOSAGE.—With this enormous amount of evidence at hand, it would seem that if we can determine the doses customarily used in these experiences we shall have evidence from which we may construct definite figures as to the efficient preventive dose of tetanus antitoxin for the horse.

The question of dosage has really been under discussion since tetanus antitoxin was discovered. It was early demonstrated that antitoxin depends for its specific value solely upon its ability to neutralize toxin—the fact of neutralization being determined by the harmlessness of a mixture of toxin and antitoxin when injected into one of the small laboratory animals—either a mouse, guinea pig or rabbit.

Tetanus toxin is one of the strongest poisons known. A small fraction of a milligram is sufficient to kill a white mouse. In like manner a minute quantity of antitoxin is sufficient to neutralize a fatal dose of toxin for a mouse. On account of the infinitesimal quantities necessary on both sides, the strength of antitoxin was early stated in terms of the number of grams of mouse or guinea pig weight protected by one c. c. of the serum. These figures reaching into the millions are still used in certain

foreign laboratories, as they were formerly used in some of the laboratories in America. Such figures have always been very cumbersome and various local efforts were made to reduce the nomenclature to more convenient terms. Partly for this reason the statement of strength used by practically every laboratory was unique until the establishment by the United States government of a standard method for the United States. This standard is officially defined as follows:

"The immunity unit for measuring the strength of tetanus antitoxin shall be ten times the least quantity of antitetanic serum necessary to save the life of a 350 gram guinea pig for 96 hours against the official test dose of the standard toxin furnished by the Hygienic Laboratory of the Public Health and Marine Hospital Service.

The official test dose of toxin was made 100 times the smallest quantity of toxin which would kill a guinea pig within 96 hours.

A new unit to be the standard for the whole country was thus established, but its interpretation in terms of dosage was impossible on account of the absence of clinical and experimental evidence in human practice. Realizing, however, that physicians would require some statement as to the number of units they should use in practice, an arbitrary dose of 1,500 units was made the official immunizing dose.

The efficiency of this dose in human practice I shall not now attempt to discuss. It seemed to me at the time that while 1,500 units might be required to immunize a man, experience had shown that a smaller dose was sufficient for the horse and the investigation which is now in progress tends to confirm this idea.

An explanation might naturally be required as to why man should receive a larger dose of antitoxin for immunization than the horse. This explanation is easily made.

The vehicle of the tetanus antitoxic power is horse serum. Injected into man it is a foreign proteid and is eliminated very rapidly. Dehne and Hamburger (1907) (19) found that when tetanus antitoxin was injected into man, the quantity in the

blood rose gradually until the second or third day when it remained constant to fall brusquely about the seventh or eighth day. This question is interestingly discussed by Römer and Sames (1909) (20). According to them, all the investigators mentioned agree that homologous serum is eliminated much more slowly than heterologous. In passive immunity against tetanus, especially in suppurating wounds, the length of time the antitoxin remains in the blood is (within limits, of course) more important than the amount which is present there during the week following the injection of the antitoxic serum. Antitoxic horse serum is homologous to the horse and therefore compared to man a relatively smaller quantity is sufficient to confer a longer period of passive immunity. Experiment number one (reported below) shows that after a period of 29 days the horse which received only 250 units was still immune, while the horse which had received 50 units possessed considerable resistance.

This investigation was taken up along two lines. First, an attempt was made to find out as far as possible the size of the doses used and recommended in foreign countries and to get some idea of the number of units formerly used in America; and second, to ascertain as nearly as possible by direct experiment the number of units actually necessary to protect the horse from infection.

DOSES USED ABROAD.—I have not yet received sample packages of the antitoxins used in Germany, Austria, England, Denmark or Italy by veterinarians and consequently I have been unable to make an estimate of the doses used in those countries. Rosenau and Anderson (21) found in a German serum which they examined 330 units per c. c. The dose recommended in Germany for immunizing purposes is 4 c. c. of a serum whose value is less than 5 A. E. (antitoxic units—Behring system).

We have imported directly from the French market packages of antitoxin on sale for veterinary use. We obtained the product of the Pasteur Institute of Paris, and the product of the Institut Bacteriologique de Lyon.

There was no date or number upon the bottles from the Pasteur Institute. Each bottle was stated to contain 10 c. c. for veterinary use. Upon examination this serum was found to contain about 50 American units per c. c.—in other words, the contents represented 500 units.

The bottles from the Lyons Institute were marked to contain 10 c. c. and were dated January 20, 1910. Upon examination it was found that the serum contained about 30 units per c. c.—in other words, a 10 c. c. dose represented about 300 American units.

Serums from these two institutes were examined by Rosenau and Anderson (21) in 1908. At that time two samples of serum from the Pasteur Institute were found to contain 40 units per c. c. and one other sample contained 66 units per c. c.; in other words, the 10 c. c. doses represented in two instances 400 units, and in the other about 660 units. One sample of antitetanic serum from the Lyons Institute was found by them to contain less than 50 units (it was not tested lower) in other words the 10 c. c. does represent less than 500 units.

The fact that the examination made by ourselves in 1910 agrees so closely with that made by Rosenau and Anderson in 1908 would seem sufficient evidence that the dose of anti-toxin used by practically all veterinarians in France varies from 300 units to about 650 units, the great majority being in the neighborhood of 500 units. This is the dose which in France in many thousands of cases has been followed by practically no failures.

The laboratory records show that one of the American firms recommended and distributed during more than a decade a dose of tetanus antitoxin for immunizing purposes certainly not greater than 500 units. As stated above, this firm has not heard of a single failure due to its product.

EXPERIMENTAL EVIDENCE.

As part of the experimental evidence we may mention the experiments of Nocard, which are quoted above.

The Pasteur Institute dose of 10 c. c., usually about 500 units, protected a horse against a certainly fatal dose of toxin given

In planning the experiments which I wish to report now, it was our purpose to repeat as nearly as possible the conditions of a natural infection. With this in view, silk cords two inches long, knotted at one end, were soaked in a suspension of tetanus spores, being heated at 80° C. for one-half hour to destroy the toxin. The cords were then dried.

Experiment No. 1.—December 9, 1909—Six horses received directly into the muscle silk cord on which tetanus spores had been dried. Antitoxin injected subcutaneously eight hours later.

January 7, 1910.—No symptoms of tetanus had developed in any horse. Each received ten c. c. of a suspension of tetanus spores (heated to 80° C. for 30 min.) to which had been added live virulent staphylococci. The injection was made into the cubital muscles of the left anterior limb. Antitoxin was not repeated, the injections had been given 29 days before.

RESULT.

No. of

Horse. Antitoxin.

1316	1000 units—No symptoms; still in stable, May 10, 1910.
1318	500 units—No symptoms; still in stable, May 10, 1910.
1323	250 units—No symptoms; still in stable, May 10, 1910.
1322	100 units—January 23, 1910, symptoms of tetanus noticed. Died January 31, 1910, 24 days after infection.
1315	50 units—January 23, 1910, symptoms of tetanus noticed. Died January 28, 1910, 21 days after infection.
1320	Control—Died January 13, 1910, 6 days after infection.

Experiment No. 2.—On February 18, 1910, five horses were injected with material similar to that used to infect horses in the experiment number one. That is, they received 10 c. c. of a suspension of tetanus spores which had been heated to 80° C. for

30 minutes. To this suspension was added, after cooling, a large loop-full of a 24-hour agar culture of staphylococcus aureus. On account of the very acute death of the control horse in experiment number one, the suspension of spores was much more dilute.

Eight hours later two of the horses received 100 units of antitoxin and two of the horses received 50 units of antitoxin. The remaining horse was kept as a control.

None of these horses developed tetanus.

Experiment No. 3.—The above experiment was repeated with five new horses. The injections were made on May 1, 1910, the antitoxin being given eight hours after the infection.

Only ten days have elapsed since this experiment was started, and it is, of course, too soon to make a prediction. The control horse, however, developed definite symptoms of tetanus on the eighth day and died on the tenth. None of the other horses show to the slightest symptoms of tetanus.

Conclusions.—The evidence which has been collected in this paper appears to justify the following conclusions:

1. That tetanus antitoxin as a preventive of tetanus in the horse is as nearly perfect as anything in biology can be.
2. That a very small quantity of tetanus antitoxin is sufficient to protect a horse against an ordinary infection.
3. That clinical experience proves a dose of 500 units to be amply sufficient for practically all cases.

NOTE.—The above was the status of Experiment No. 3 at the time this paper was read. On the thirty-second day after infection one of the horses which had received fifty units of antitoxin exhibited symptoms of tetanus and on the account of the severity of the symptoms was destroyed.

On the twenty-third day after infection one of the horses which had received one hundred units of antitoxin showed symptoms and died of tetanus on the 27th day.

Of the other two, the fifty unit horse showed only slight local symptoms, but the hundred unit horse exhibited none.

The death of these two horses occurring twenty-one and eighteen days later than the control rather increases the value of this

experiment. They show that the horses were susceptible, but were protected for a period by even the very small doses administered against a dose of tetanus bacilli certainly much greater than a horse would ever receive accidentally.

The great expense of such work with horses precludes the possibility of our going farther with it. While it is believed that the clinical reports presented above (and which are still being collected) have proved the main point, it is hoped that some means may be found to continue the experimental work with horses and other animals.

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BIOLOGICAL THERAPEUTICS IN VETERINARY PRACTICE.*

BY DR. T. F. KREY, DETROIT, MICH.

By "Biologic Therapeutics" is meant the use of biologic products as remedial agents, chiefly the products of bacterial life, and the reactionary products developed in the blood of animals injected with bacteria or their toxins.

When we consider the remarkable advancement that has been made during the past decade in this branch of medicine, we may confidently predict that the future will record still greater and more rapid progress. Truly at no time has this branch of the healing art been regarded more expectantly. Never has its future seemed more promising.

To us, the knowledge that much of this progress is directly due to the achievements of many eminent confrères is indeed gratifying. To them who toil unceasingly converting theories into facts, we owe a debt of gratitude. It is none the less gratifying to note the enthusiasm with which our profession has kept pace with these advanced teachings for the amelioration of disease.

Not many years ago serum therapy in the treatment of disease was considered skeptically. Even the most progressive veterinarians looked upon its use as an expensive experiment only to be considered as a last resort, and then, only in extreme cases where the life of a valuable animal was threatened. To-day we find a vast majority of veterinarians fully alive to the importance of serum therapy and ever ready on all occasions to administer serums, antitoxins or vaccines, whenever their use is indicated.

* Presented at the January meeting of the Michigan State Veterinary Medical Association, Saginaw.

Let us view for a moment the results of this activity on the part of the progressive veterinary investigator. We believe his eagerness to grasp and execute his knowledge of advanced methods of treating disease has accomplished more to widen the breach between scientific treatment and charlatanism (which happily through his efforts is rapidly becoming a thing of the past) than any other single effort. The application of his knowledge is perhaps the best indication of his capacity to use it, and thus he not only becomes a power in his immediate community, gaining and holding the respect and support of his clientele, but by his knowledge helps incalculably in the erection of the great edifice of scientific medicine and the elevation of his chosen profession. It would require far too much of your time to explain in detail modern methods of preparing the many biological products now in use. Suffice it to say every care is observed in selecting suitable biological subjects free from disease. Each individual animal is isolated for a specified time and kept under close observation, during which time it is tested for glanders, tuberculosis, etc., as the case might be, and before it is finally accepted for use, it must successfully pass the most rigid tests known to science.

To illustrate the method of preparing antitoxins, let us briefly consider tetanus antitoxin. The horses are injected with tetanus toxin. To produce this, a pure culture of the tetanus germ is grown in beef bouillon, which is then filtered to remove all the germs. The filtrate, containing the toxin, is very poisonous; hence it is necessary to begin the injections with small quantities, gradually increasing the dose as the horse becomes immune or capable of withstanding larger amounts. This ability to withstand otherwise fatal doses of toxin is due to the formation of a specific antidote in the body of the horse.

This antidote is the antitoxin and is specific in that it will neutralize the killing power of tetanus toxin, but will not neutralize other toxins or poisons. By repeated injections of toxin the amount of antitoxin in the horse can be increased enormously, so that one part of the blood serum will neutralize 100 to 200 parts of toxin. When this stage has been reached a portion of

the horse's blood is taken (by introducing a cannula into the jugular vein) and allowed to separate spontaneously into serum and coagulum. The serum thus obtained after having a small amount of preservative added to it, is tested and bottled. It goes without saying that in the preparation of the toxin and its injection into the horses, as well as in obtaining the blood serum, the most rigid bacteriological technique is maintained. The variation in strength of the antitoxic serum from different horses; the absolute purity of the finished product are all important and delicate questions demanding for their determination a high degree of skill and scientific accuracy of observation. These qualifications, in our judgment, outrank all other considerations in the work of producing a reliable antitetanic serum. A perfectly healthy horse has perfectly pure blood. The purity of the blood, however, and of the serum it includes should never be simply inferred; the horses should be kept under special observation for several weeks after the blood is withdrawn, that the last lingering possibility of question as to their perfect freedom from disease of every kind may be dispelled; specimens of the separated serum are planted upon culture media where germs would grow if any were present.

Again, large quantities of the serum are injected into guinea-pigs, that bacteria or toxins of any kind, if present, may declare themselves, as they undoubtedly would in these very susceptible little animals. Negative evidence here is positive evidence of the purity of the serum.

It would be difficult to select an antitoxin that has received more universal attention during the past year or two than Tetanus Antitoxin. Vast amounts of indisputable evidence submitted by practitioners in both human and veterinary medicine seem to justify its use not only as a prophylactic, but in increasing doses for curative effects.

In 1895 Nocard demonstrated to the satisfaction of the French veterinarians the great value of prophylactic therapeusis. Wishing to impress the value of prophylaxis, Nocard distributed

among the French veterinarians 1,800 10 c. c. flasks of antitetanic serum.

Reports received indicated that 375 animals (victims of wounds which might easily have proved tetanigenous) had been injected and not one developed tetanic symptoms; at the same time these veterinarians had observed 55 cases of tetanus among animals not treated with serum, but otherwise exposed to the disease essentially the same way as the 375 which escaped.

McFarland and Ruck, in this country, have observed similar results in a series of 800 horses exposed to infection. Comparison between those which received prophylactic treatment and those which did not show that tetanus developed in one per cent. of the former and ten per cent. of the latter. Could stronger proof of the protective value of antitetanic serum be desired?

A distinguished authority has said: "The initial symptoms of tetanus do not herald the beginning of the disease, but really the beginning of death from the disease." Essentially prophylactic treatment is of paramount importance, but unfortunately frequently veterinary advice is not sought until the characteristic symptoms are manifest, then to produce gratifying results the serum must be given in adequate doses with a view of effecting a cure by neutralizing the uncombined toxins. Unfortunately, not infrequently, our clients are reluctant to proceed with a treatment involving at the same time considerable expense and doubt of ultimate recovery; yet, as one of our collaborators aptly put it, "It is perhaps advisable to remain firm rather than to undertake the treatment of an impossible case with inadequate serum with nothing in view but inevitable failure, for we cannot hope to neutralize rapidly increasing toxins with an inadequate amount of antitoxin, and it is a question if our reputation as a scientific veterinarian does not suffer infinitely more through the loss of a hopeless case than by maintaining a principle we are perfectly justified in establishing."

Proper appreciation and timely use of the prophylactic dose of serum in the treatment of suspicious traumatism will, in a

great measure, eliminate this opposition. Further than this, we believe under these circumstances, prophylactic treatment is not only justifiable but demanded as a duty by the present conditions of prophylactic therapeutics. I believe there is no evidence that the serum has any effect on the bacillus; it only neutralizes the toxins, but it is equally important to note that the bacillus of tetanus does not belong to the class of septicemic organisms which invade the whole body and which produce their effects by growth and increase, but fortunately on the contrary, the bacillus of tetanus remains localized at the original point of infection, within reach, and where their growth may be greatly, if not completely, controlled by energetic treatment with efficient antiseptics and disinfectants. In its growth, however, the tetanus bacillus produces a powerful toxin which is taken up by the peripheral nerve endings and carried along the axis cylinders of the motor nerves, eventually reaching the spinal cord. With injections of serum we hope to neutralize these toxins before they combine with the vital cells of the organism destroying their functional activity. Whether or not this can be accomplished by administering in adequate doses is exceedingly difficult to verify, even in severe cases that successfully respond to treatment there remains an element of doubt as to whether or not the patient would have recovered had no serum been administered, yet it is reasonably certain that the mortality is very much higher when cases are treated without antitoxin.

Standardization of tetanus antitoxin is of paramount importance. With much pleasure and satisfaction we reviewed the recently issued Bulletin No. 424 by the United States Department of Agriculture, entitled: "The Need of Controlling and Standardizing the Manufacture of Veterinary Tetanus Antitoxin." Quoting from the Bulletin verbatim:

"The method of standardization was unanimously adopted by the Society of American Bacteriologists subsequent to the following report made by a special committee:

"That tetanus antitoxin be standardized by the tetanus toxin furnished by the Public Health and Marine Hospital Service. The

unit is ten times the least amount of serum necessary to save the life of a 350-gram guinea-pig for 96 hours against the official test dose of the standard toxin. The test dose is 100 minimal lethal doses of a precipitated toxin preserved under special conditions at the hygienic laboratory of the Public Health and Marine Hospital Service.

"It was decided that the minimal immunizing dose of a case of possible infection through a wound should be 1,500 of such units. It was decided that after April 1st the new unit should be adopted by all producers of tetanus antitoxin.

"In this method the immunity unit for measuring the strength of tetanus antitoxin is fixed so that it shall be ten times the least quantity of antitoxin serum necessary to save the life of a 350-gram guinea-pig for 96 hours against the official test dose of a standard toxin."

It is needless to add that the methods adopted should receive the heartiest approval and support of both the producer and user. Standardization as recommended means a serum prepared on a sound rational scientific basis with more definite, uniform potency and results, and will have a tendency to a more intelligent use of the product.

Antistreptococcic serum is rapidly growing in favor, and is being used by veterinarians in the treatment of many diseases of bacterial origin. When the horse is injected with gradually increasing amounts of killed cultures of the germ (*Streptococcus Pyogenes*) a peculiar principle develops in the blood that is useful for prophylactic and curative purposes. These cultures are obtained from the exudate of a number of diseases in human beings and certain pathologic conditions common to animals. In other words, mixed infection.

As in the case of antitetanic serum some months elapse before the horse is ready for bleeding. Then from four to six quarts of blood are withdrawn from the jugular vein under strict aseptic and antiseptic precautions. The blood clots within a few minutes when it is placed in a refrigerator and kept there for a few days. At the end of this time it is found that a large portion

of the serum has become separated from the clot. This serum contains the antitoxemic principle. Next it is withdrawn from the blood-tubes by means of sterilized siphons into sterilized bottles, and a very small quantity of trikresol added to preserve it, after which it is allowed to stand for several days before the next step is taken. Then a bacteriological examination is made to prove the sterility of the product, which is afterwards carefully filtered and again examined. If it be found free from germs, the clear filtrate is put in syringe-container bulbs, the operation being done in an isolated bottling room. After a lot of serum has been so disposed of, a number of the bulbs are taken at random and for the third time examined bacteriologically. Although antistreptococcic serum was originally recommended in the treatment of septic infection, research work of prominent veterinary investigators is constantly enlarging an already comprehensive list of diseases indicating the use of the serum.

Dr. John Spencer, Virginia Agricultural Experiment Station, reports gratifying results with its use in the treatment of pyemic arthritis in the December, 1908, edition of the AMERICAN VETERINARY REVIEW. In the January, 1909, edition of the REVIEW Dr. G. H. Acres, Sudbury, Ont., reports good results with antistreptococcic serum in treating infectious anemia. J. R. Craif, M.R.C.V.S., has used it successfully in treating strangles. Similarly, Dr. C. H. Jewell, U. S. Army, Fort Riley, in a paper read before the American Veterinary Medical Association at Philadelphia, referred to its use in shipping fever, using it on a number of cases, and in comparison, influenza antitoxin on a number of other cases. He concluded that where antistreptococcic serum is a valuable immunizing agent, his experience with both serums showed that influenza antitoxin (P. D. & Co.) produced a longer immunity than antistreptococcic serum.

Briefly, we feel confident that time and experiment will disclose many diseases of bacterial origin that will promptly yield to treatment with antistreptococcic serum, and this offers to the

veterinarian who desires to promote the welfare of his profession a wide field for original investigation. Along these lines it is worthy of note that a number of veterinary investigators are at present engaged in proving the value of canine distemper antitoxin. Canine distemper, as we so fully realize, has successfully defied all attempts to halt its ravages, even though the greater resources of the pharmacopœia in all probability have been exhausted time and again in search of relief. Perhaps this is due in no small measure to an almost total absence of any knowledge regarding the specific organism which causes it, which has always been considered ultra visible. Experimentally some very encouraging results have been obtained in the treatment of the disease with antidiphtheric serum.

A number of veterinary investigators with whom we are in close touch have been trying this serum in clinical experiment for more than a year with a very satisfactory reduction in mortality. Besides this, a member of our scientific staff has devoted his entire time for the past two years to the study of canine distemper with encouraging results. However, experiments of this nature require time to consider every detail in relation to the test, but we believe the not distant future will mark the advent of a serum or vaccine for the successful treatment of this disease.

Another interesting discovery of which we have heard and read much during the past year is "Ophthalmic-Reaction Test for Tuberculosis in Cattle." The ophthalmic test consists, as you are aware, of instilling in the eye at the external canthus a small amount of tuberculin usually $\frac{1}{2}$ c. c. The eye is immediately closed and lightly rubbed to distribute the tuberculin as much as possible, and so that it will not be washed away by the tears.

Owing to the glycerine the tuberculin is absorbed very easily into the tissues. Speaking of this test, Dr. J. Lignieres states in *Recueil de Médecine Veterinaire*, 30 November, 1907:

"Up to date I have used the ophthalmic-reaction upon 200 cases of tuberculous cattle. All of the animals which reacted to the well-known subcutaneous test also gave a positive ophthalmic

reaction, and healthy animals gave no ophthalmic reaction. I used undiluted tuberculin of higher concentration than usual. Under these circumstances the animals always gave a very clear ophthalmo-reaction, at times visible within three hours characterized by increased flow of tears, a hyperæmic of the conjunctiva, and especially by formation of clots of white pus almost entirely formed of polymorphonuclear leucocytes. These clots are easily seen upon the conjunctiva; they accumulate at the internal canthus here they soon escape: Symptoms other than the presence of pus, are not sufficient. The pus must be present to make the test valid. It never fails with tubercular subjects, if the test is conducted as above."

The ophthalmo-reaction continues for about twelve hours, at times more. With certain animals the reaction is not visible until after fifteen hours.

Messrs. Campbell and White, as reported in the *Journal of Experimental Medicine*, March, 1908, conducted experiments with seventy-one head of cattle, twenty-five of which were shown to be tuberculous, and forty-six non-tuberculous, as tested by the usual subcutaneous method. They concluded from their researches that the ophthalmo-tuberculin test is of limited value in the diagnosis of tuberculosis in cattle, but state further on that "we therefore hold that if 1 c. c. tuberculin is carefully instilled into the junctival sac, and if careful comparison of the instilled eye with the opposite eye shows that a reaction of varying intensity results in ten or twelve hours after the first instillation, a tubercular lesion is present." Furthermore, we are inclined to believe that the ophthalmic tuberculin test will reveal tuberculosis at as early a state as the usual subcutaneous test, and that the cutaneous test does not seem to be as accurate as the ophthalmic test. Along with this, we find the Health Board of Chicago demanding "that all milk cows producing milk for consumption in the city of Chicago shall be tested both by the subcutaneous and ophthalmo-reaction tests."

Let us hope that the research work of investigators will prove this method of testing cattle of sufficient diagnostic value to use

the test in the near future to the exclusion of all others. By its use the taking of the temperature several times prior and subsequent to injection of the tuberculin subcutaneously as now practiced, will be eliminated, and thus much time and annoyance will be saved the busy practitioner. The experiments we are conducting at the present time shall be continued, and any definite results will be reported in due season.

The conception and development of the Opsonic Theory has powerfully revived the interests of the scientific world. It is quite possible that bacterial vaccines will play an important part in the treatment of veterinary patients. However, it is yet too early to touch on this important subject with any knowledge of definite results in veterinary practice.

We have been in close touch with Sir A. E. Wright, one of the originators of the Opsonic Theory, a member of our biological staff having spent several months in Dr. Wright's laboratory studying at first hand the subject of vaccine-production. In human practice we have made systematic efforts to determine the utility of these products, and the mass of information which we have collected demonstrates that, in properly selected cases and in competent hands, bacterial vaccines yield good and sometimes brilliant results. In conclusion let us hope that this important research work will continue, and may we in veterinary practice be ever observant, uniting our efforts to promote every course which tends to advance the progress of our chosen profession, so that each year as we convene we may point with pride to veterinary therapeutics as a more exact science.

THE A. S. P. C. A., Philadelphia, has an automobile horse ambulance. Verily the horses of the Quaker City are at the mercy of the automobile.

DR. ANGUS MACINTOSH, of Perth, West Australia, an enthusiastic surgeon, and a delegation from New York, had a very interesting visit with Dr. Runge on July 15th, when they journeyed to Newark to attend the clinic of the Veterinary Medical Association of New Jersey.

AN EDUCATIONAL PROBLEM.*

BY J. P. FOSTER, B.Sc., V.S., M.D.V., HURON, S. DAK.

It is with considerable trepidation that I venture upon what is perhaps dangerous ground; but it is said that "fools rush in where angels fear to tread." Some of the things that I have attempted to bring out in this paper are certainly very unpleasant; and should anything be said to embarrass or injure the feelings of any member, I shall be exceedingly sorry.

In drawing certain parallels, it has been necessary to border on the personal, although no names have been mentioned. In my effort to be impersonal, I suppose I have succeeded about as well as did a certain character of whom I once read. He had been playing poker during the forenoon with four or five other men, one of whom had lost an eye in a shooting affray. This one-eyed individual had been cheating. When the game was resumed in the afternoon, the man first mentioned seated himself at the table, drew a large 45-caliber revolver from his belt, and laid it across his knees. Fixing his gaze upon the man minus one optic, he said: "Gentlemen, I don't wish to be personal, or mention any names; but if there is any more cheating here to-day, a fellow I know of is going to have his *other* eye put out."

I assure you that my intentions are of the best, and I hope that you will receive this paper in the spirit in which it is written. Should you become vexed, however, kindly remember the story told concerning the notice that was posted above a church organ in a town in the western cattle country. This notice was for the

* Presented at the annual meeting of the Minnesota State Veterinarian Medical Association at St. Paul, January 12, 1910.

benefit of possible obstreperous members of the congregation, and was as follows: "Don't shoot at the organist. He's doing the best he can."

No doubt a majority of the members present are familiar with the contents of Circular 133, issued July 6, 1908, by the Bureau of Animal Industry of the United States Department of Agriculture. This circular was based upon the report submitted to the Secretary of Agriculture by the committee appointed by him for the "purpose of obtaining information regarding the course of instruction being given at the various veterinary colleges.

References to this circular were freely made, and certain portions of it copied and industriously circulated in the bulletins and annual announcements published by several of the schools designated as being included in the list of what were termed "Class A" veterinary colleges. One of these so designated Class A colleges devoted three pages of its combined prospectus and bulletin 1908-9 to a reproduction of extracts from this circular, not omitting, of course, the list of Class A colleges; and in the introduction of its prospectus, draws particular attention to the fact that it is in "accord" with the provisions of the circular mentioned. It is true, however, that at the time the prospectus was issued, its graduates were not eligible to membership in the American Veterinary Medical Association. This association has since concluded to accept graduates of this school as members, beginning with those of 1908.

Another enterprising institution, also in Class A, sent out in the envelope with its annual announcement, what at first glance very much resembled a bona fide Circular 133; but upon closer inspection and comparison with the original, it proved to be a somewhat shorter but wider pamphlet, which, with the slight difference in the style of type and quality of paper used, might cause one to wonder if it had not been gotten out by a local printer and not at the government printing office.

Regardless of just where it was printed, it probably served the advertising purposes for which it was evidently intended. These seeming inconsistencies, however, may have been due to a

pardonable pride in having been recently placed in the highest classification of colleges, and should undoubtedly be overlooked.

The question that concerns us is: what effect did the report to the Secretary of Agriculture have in raising the standard of veterinary education? I believe that Dr. Tait Butler, in discussing the report of the chairman of the Committee on Intelligence and Education, at the Philadelphia meeting of the American Veterinary Medical Association in 1908, truthfully summed up the situation when he said: "The Secretary of Agriculture has done more in the last six months to elevate the standard of veterinary education, to build up and complete laboratories in our colleges, to extend the courses of study, to secure more proficient faculties, to raise the requirements for entrance and the standard for graduation, than all of the work of the previous ten years has done."

Over a year after Circular 133 was published, or, to be exact, on August 9, 1909, Circular 150 was issued by the Bureau of Animal Industry, and while Circular 133 was headed: "Report and Recommendations Regarding Veterinary Colleges in the United States," Circular 150 is entitled: "Regulations Governing Entrance to the Veterinary Inspector Examination." The regulations prescribed by Circular 150 have been approved by the Secretary of Agriculture and the President of the Civil Service Commission, and became effective on and after September 1, 1909. A comparison of the circulars discloses the fact that the "regulations" of Circular 150 follow the "recommendations" of Circular 133 very closely, and, with few modifications, are the same. The separation of colleges into "A," "B" and "C" classes as recommended in Circular 133, is modified by Regulation XXIV. of Circular 150, by substituting for these classes a "list of accredited veterinary colleges."

Included in this list of accredited colleges are three schools that appear in "Class B" in Recommendation 13 of Circular 133. So it is evident that these colleges have since taken advantage of Recommendation 17 of Circular 133, which provided for recognition upon submitting evidence sufficient to convince the

Department that the minimum standard of requirements was being complied with; or that it was considered that these schools had been improperly classed in the first instance.

While it is said that laws are made for the "greatest good to the greatest number," it is also true that some laws work a great hardship to many.

Regulation XV. of Circular 150 is in part as follows: "No one of the colleges herein enumerated shall give credit to any student for any work done at colleges not included in this list." During the forty-two years from 1866 to 1908, the Ontario Veterinary College, as a two-term school, graduated 3,363 men. Of these graduated, 170 have since taken degrees in the following schools in the United States: McKillip Veterinary College, 102; Chicago Veterinary College, 35; New York State Veterinary College, 8; Kansas City Veterinary College, 8; New York College of Veterinary Surgeons, 6; New York-American Veterinary College, 5; National Veterinary College, 3; Ohio State Veterinary College, 2; United States College of Veterinary Surgeons, 2; Veterinary Department, University of Pennsylvania, 1; and American Veterinary College, 1. One of these men graduated at the National Veterinary College, and later at the New York State Veterinary College; another graduated at the New York-American Veterinary College, and later at the McKillip Veterinary College, while still another graduated at the McKillip Veterinary College, and finally at the Veterinary Department, University of Pennsylvania. Some of the colleges just mentioned have always been three term schools, others have not; but in nearly all of the cases referred to the schools were maintaining a three-year course at the time of the attendance of the Ontario graduates.

A study of the catalogues of the colleges enumerated, as regards residence and present lines of work, discloses in a measure the probable motive leading these men to supplement their Ontario education. Many of them were from states requiring the possession of a diploma from a three-year school as a qualification to practice, while others who had graduated from Ontario

subsequent to 1897, and desired to enter the Bureau of Animal Industry were obliged to return to a three-year school for a third term, and graduate, in order to become eligible to the civil service examination for an inspectorship. Forty of the Ontario graduates who subsequently graduated at the McKillip Veterinary College are Canadians, many of whom are residents of Manitoba, in which province a diploma from a three-year school is prerequisite to the establishment of a legalized practice.

Regulation XV. puts a stop to all this; for as I understand it, and as it is interpreted in letters which I shall read to you, received by Ontario graduates, from a number of accredited colleges, no graduates of this institution can now be allowed any advanced standing whatever. (At this point letters were read from four different accredited colleges to Ontario graduates, informing them in no uncertain terms that they could be allowed no credits whatever.) This means, therefore, that, should any graduate of this school desire in the future to enter an "accredited college," it will be necessary for him to matriculate as a freshman. This is preposterous when we stop to think of the men in our profession in the United States and Canada of national reputations whose veterinary education according to this regulation amounts to *absolutely nothing*. According to this regulation, the Ohio State Veterinary College, the Chicago Veterinary College, the McKillip Veterinary College, the Indiana Veterinary College, and the United States College of Veterinary Surgeons have at the present time prominent faculty members, graduates of the Ontario Veterinary College, who could not be allowed a moment's credit in the colleges in which they teach. Surely this is an anomalous condition of affairs.

I also wish to call your attention to the fact that, according to another regulation (XI.) of Circular 150, none of the faculty members just referred to can be considered as one of the five graduate veterinarians necessary for an accredited college to have on its faculty; for the reason that this regulation prescribes that these veterinarians must themselves be graduates of accredited schools. In other words, they do not count, and cannot

teach major subjects as is required by still another regulation (CIII.). So, at the present time, one of the greatest comparative anatomists in this or any other country is teaching anatomy, one of the most celebrated practitioners of veterinary medicine in the United States is teaching the Practice of Comparative Medicine, and one of the best known and ablest surgeons in the Middle West is teaching surgery, all major subjects, in the colleges previously mentioned, regardless of the restrictions of Circular 150. Will these men be forced to give up teaching because they graduated from the Ontario Veterinary College, and have not since graduated from an accredited veterinary college? They certainly must if the regulations of Circular 150 are to be enforced.

Within a very few years Ontario graduates have held positions ranging from a dean to instructor in the Veterinary Department, Iowa State College, the New York State Veterinary College, the Veterinary Department, Columbian University, and the Kansas City Veterinary College.

Some might say, "Oh, well, the men to whom you refer have already made their mark in the profession, and care nothing for the predicament that you picture." Be that as it may, but how about the younger men who have graduated during the past ten or fifteen years who have proven themselves able and progressive practitioners and a credit to any profession? Possibly some of these men would like to enter an "accredited college."

Circumstances might arise on account of his own ill health, or that of some member of his family, requiring the removal of such a man from the state in which he has practiced, to a state whose laws prescribed the possession of a diploma for a three-year school. This man is now barred from the privilege of entering a three-year college except as a freshman, and must either begin his veterinary education anew, or retire from the profession. Surely, gentlemen, this is not a pleasant thought to the forty-two graduates of the Ontario Veterinary College in the State of Minnesota, who, under the circumstance just mentioned, would awaken to find that, like Othello, their occupation was gone. There are men in this association of whom we are all

proud; but according to Regulation XV., the time they spent at the Ontario College counts for naught, should they desire to obtain a degree from an accredited school. "Comparisons are odious," and it is far from my purpose to start a discussion of the relative merits of different colleges conducted in the past as two-year schools, and maintained at the present time as three-year institutions. Such a discussion could end only in a series of criminations and recriminations, would engender bad feeling, and could not help in the solution of the real problem of what the profession is going to do with graduates of the Ontario Veterinary College. I fail to understand why a graduate of this school of the same mental caliber is not as well educated professionally as graduates of the American Veterinary College, the Chicago Veterinary College, the Veterinary Department, Iowa College, the Ohio State Veterinary College, the New York College of Veterinary Surgeons, the Kansas City Veterinary College, the Indiana Veterinary College, the San Francisco Veterinary College, or the National Veterinary College, during the period that they were conducted as two-year schools. We have with us here to-day several members of this association who graduated at one of the schools just mentioned, while it was maintaining a two-year course; and knowing them as well as I do, I am satisfied that they are not egotistical enough to consider themselves one whit better educated than their brother members who graduated at the Ontario Veterinary College during the identical years that they secured their diplomas from what is now a three-term school.

Dr. Rutherford is reported as having said: "The Ontario Veterinary College as a teaching institution, stands second to none in the English-speaking world." This statement was not made, however, in extenuation of the failure of this school for so many years to become a three term college, in spite of the fact that for ten consecutive years the following notice was published in its annual announcement: "A change in the period of study is contemplated. Such change will not effect students entering this year." I think it will be conceded by the faculties of the

different veterinary institutions that the Ontario graduates have since attended, that, as a general proposition, they have been able to carry on their work with considerable credit to themselves and satisfaction to their instructors.

As examiner in anatomy and physiology on our State Board of Examiners in Veterinary Medicine and Surgery, I wish to state that of the twenty-six candidates examined by the board at its last meeting, a large proportion of whom were three-year graduates, the best papers in my branches were written by a 1908 graduate of the Ontario Veterinary College. There were ten questions in each subject, and the papers turned in by this man were well nigh perfect. In all fairness, however, I am forced to admit that a graduate of the same school, and of the same year, made a miserable failure of the entire examination.

Gentlemen, I appeal to you; and in the words of the prophet would say, "Come now and let us reason together." Shall we say to graduates of the Ontario Veterinary College, "You have no right to improve yourselves so that you may conform to present laws and regulations, except under the penalty of beginning anew your professional education; otherwise be content to remain as you are, hampered by the limitations that surround you?" If the conditions imposed by Regulation XV. as affecting all graduates of the Ontario Veterinary College are unjust, unfair, and clearly detrimental to the best interests of the profession, in that it prevents able, honorable and progressive veterinarians from improving their condition, is it not possible to bring about some modification of this regulation?

What is the best method of procedure in any attempt to secure modification of Regulation XV.? I confess that I do not know. It is my opinion, however, that all members of the veterinary profession who believe in "a square deal" should interest themselves in this question regardless of where they secured their veterinary education.

Do not expect the older Ontario graduates to display any special interest in this matter, unless the discount placed upon

their education since August 9, 1909, has disturbed their equanimity of mind.

They consider that when they graduated, their education was as good as the best. They have been eligible to membership in the American Veterinary Medical Association, and to the examination for inspectorship in the Bureau of Animal Industry, for many years. They are generally well satisfied with themselves and with conditions as they exist, and may even inform you that the Ontario Veterinary College richly deserves all of the censure that has been heaped upon it in recent years, for not becoming a three-term school long ago. This is undoubtedly true, but is begging the question—Are graduates of the Ontario Veterinary College entitled to credit upon entering any of the accredited colleges listed in Regulation XXIV.? If so, to how much credit are they entitled, and under what conditions?

There are a few other schools not included in the list of accredited colleges. Some of them, as, for instance, the Veterinary Department, Detroit College of Medicine, and the Ohio Veterinary College (not to be confounded with the Ohio State Veterinary College) are not now in session. Graduates of the two schools just mentioned are members of both the American Veterinary Medical Association, and the Bureau of Animal Industry. Of course the graduates of all these schools are in the same predicament as are those of the Ontario Veterinary College, so far as Regulation XV. is concerned; but fortunately they are comparatively few in number.

I wish it to be distinctly understood that in the preparation of this paper I have no "axe to grind," and that personally I am not affected by this regulation to which I take exception.

I shall be satisfied if, in this disconnected and rambling discussion of the situation, I have succeeded in bringing you to a realization of the paradoxical condition of some of the matters pertaining to veterinary education. I trust that in any discussion that may follow the reading of this paper, some argument will be advanced that may assist in the solution of the problems I have brought to your attention.

ABORTION IN CATTLE.*

BY RALPH H. JOHNSON, (C.V.C.), FARMINGTON, MINN.

Abortion is expulsion of a foetus before it is viable; embryonic before the fourth month, foetal, after the fourth month, and the young creature is either dead when expelled, or dies immediately afterwards. Premature birth is often viable and will not be of any consideration under this subject. There is not the same tendency or readiness in all the domesticated animals to abort. The bitch, cat and sow rarely do so even after serious injuries; but sheep and goats are rather liable to this accident; also the cow and mare; but more especially the cows, which most frequently lose their foetus. Abortion is much more frequent during the first than the second half of pregnancy.

If abortion occurs at a very early period, it may escape intact and the ovum unnoticed, without any disturbance whatever of the health of the female. Abortion is more serious when it occurs at a late period: as it then not only causes the loss of the young animal; but it may compromise the value of the mother or in fact end her existence. Abortion presents itself in two distinct forms: 1st. Sporadic, or accidental abortion. 2d. Enzootic, epizootic or infectious abortion.

SPORADIC. OR ACCIDENTAL ABORTION.—When cases occur here and there, on farm or breeding establishments, over a wide extent of country without any relationship as to causation, it is termed sporadic or accidental abortion.

CAUSES.—The causes of sporadic abortion are very numerous and will be arranged as: 1st. External causes. 2d. Internal causes.

* Read before the Minnesota State Veterinary Medical Association, January 12-13, 1910

EXTERNAL CAUSES.—Atmospheric influences, bad weather, or irregular seasons, are predisposing to or cause abortion, and there can be no doubt whatsoever that cold, “(and, especially when suddenly applied)” to the skin, may produce abortion; and hence it is that the abrupt setting in of cold weather, is often marked by abortion among animals exposed to it. The continued and severe cold of winter is far less frequently productive of abortions than when cold, wet, or frosty nights in autumn, succeed fine warm days; cold rain is sometimes very damaging in this respect. With regard to the food and drink in general we often have an undoubted cause. Food of bad quality, indigestible, or containing injurious ingredients, is well known to be dangerous; often unfavorable seasons, when forage has not been well dried and made assimilative are of more frequent occurrence. Indigestible food or that which has a tendency to collect and ferment in the stomach and may by exerting pressure on the womb produce abortion. On the other hand, too great an abundance of easily digested stimulating food, by inducing a superabundance of blood, and consequently congestion of the womb, and loosening of the after-birth, has been set down as another cause, frozen food, or water, when taken in immoderate quantity, and especially if the stomach is nearly empty, as well as forage or herbage covered with snow or frost, are also injurious to the larger animals when pregnant, and abortion immediately follows.

Filthy, putrid water frequently has a destructive influence on gestation. Some plants, such as horse tails, sedges, etc., also the leaves of beet root readily induce abortion. Rue, ergot of rye, and other abortive remedies will have a tendency to cause abortion; also poisonous substances such as cantharides, will do the same.

Physics of a drastic kind, opium, digitalis, and other drugs and ergotized grasses are causes of abortion.

Excessive muscular exercise is very likely to produce abortion; and especially if there are indications or a predisposition to abort. If the exertion is sudden and severe, or even moderate,

but coming after a period of rest, it is all the more certain to produce abortion.

Wounds to the abdomen by kicks or falls, or by squeezing through a narrow doorway, blows and shock, keeping the animal in stalls with floors that incline backwards are all causes. Access of the male, or exploration of the vagina will also cause muscular contraction of the womb which will result in abortion.

Surgical operations, bleeding, or throwing a pregnant animal down, is dangerous.

Excitement, fear, sudden surprise, or danger, heavy thunder, dog running among pregnant animals, especially nervous animals.

2d. INTERNAL CAUSES.—Badly fed and neglected animals sometimes abort, but not nearly so frequently, perhaps as those in the opposite condition, and extremely fat. It is generally admitted that with some animals there is a special disposition to abort, and sometimes without any noticeable cause, or a very trifling cause, as previous abortion, will induce abortion, while other animals never lose their foetus, though exposed to the influence of apparently most powerful causes. The disposition to abort sometimes disappears as age advances.

A more constant and potent cause, is to be found in the presence of grave diseases, and especially those which affect the system generally, producing more or less derangement of all the functions. The various serious epizootic maladies, inflammation of the bowels and all those abdominal disorders which give rise to restlessness, bloating, cough, as well as those diseases which induce cough, as bronchitis, pneumonia, asthma, etc., pleurisy, and other affections, and injuries, accompanied by great pain; as well as nervous, or convulsive derangements, such as lock-jaw, epilepsy, vertigo, etc., are all set down as causes. In acute disorder of the mother which is attended by fever, the foetus may perish from the abnormal accumulation of heat; certain virulent disorders as foot and mouth disease, and tuberculosis, may cause the death and expulsion of the foetus; dropsy of the head, dropsy of the abdomen, and general dropsy, may also lead to the

death of the foetus, and is almost a certain determining cause of its expulsion. Faulty formation or relations, between the after birth, malformations of the foetus, and malpositions, are other causes, and the presence of several foetuses, also often leads to abortions.

Diseases of womb will be very likely to lead to abortion; inflammation of the womb, as well as new formations, such as tumors and cancers, ovarian dropsy, etc., will predispose to, or excite abortion.

Abortion has not infrequently been ascribed to some defects, or other influences, in the male; as debility, arising from too frequent usage, also poor health, and there is abundant evidence, that a male enfeebled by too much use is very likely to be a cause of abortion in females to which he is mated. Abortion has been said to occur when the male was larger and more powerful than the female, various injuries as external violence may, not only injure the womb, so as to produce abortion, but the foetus may sustain bruises and damage. The foetus may be poisoned by food or medicine which do not produce any noticeable effect on the parent.

SYMPTOMS OF SPORADIC OR ACCIDENTAL ABORTION.—The symptoms of abortion are extremely varied; abortion may occur without any symptoms, or demonstrations, so far as the female is concerned; while in others the symptoms indicate a serious condition, and this usually depends on the period of pregnancy at which the accident occurs.

Generally, abortion takes place without any previous indications and the animal may be as well and lively as usual, up to the time when the foetus is expelled; and the expulsion itself is so sudden, so prompt, and accomplished with so little visible effort or disturbance, that the accident in most cases receives very little if any notice; when this simple abortion has taken place during the day, it has been noted that the flank falls in a little, the abdomen descends, the vulva and vagina slightly dilate, and there escapes from them a glutinous (sometimes tinged with blood) fluid with which the foetus is passed almost without effort,

so little disturbance does this kind cause that the animal will not require treatment with the exception of a little care from exposure for several days.

In what is termed laborious, difficult, or complicated sporadic abortion, which is often due to external causes, such as injuries, the preceding symptoms are generally well marked. The animal suddenly appears dull and peculiarly dejected; or it is restless, uneasy, and continually moving about, the appetite is lost, moaning is emitted every now and then; the pulse is quick, small and hard as in hemorrhage; progression is difficult and unsteady, the expression is anxious and respiration hurried; when the foetus is alive, there is less prostration and much abdominal pain, the animal often looks anxiously towards the flank, stamps with its hind feet, moves from side to side, lies down, gets up again, whisks the tail incessantly, and exhibits every indication of increasing restlessness; at the same time the abdomen loses its round shape and drops; if the animal is in milk, the udder becomes soft and diminished in size more or less rapidly, while the milk secretions diminish; but if the animal is not yielding milk, then on the contrary, the udders enlarge, and become swollen, the vulva is puffed and swollen, and from it escapes a tenacious mucus, streaked with blood, and if the foetus is dead, this mucus has a more or less foul odor.

In the case of more than one foetus it may happen that the one nearest the mouth of the womb is dead, and is expelled, the other being alive is retained until pregnancy is complete; or the contrary may occur, the living foetus being next to the mouth of the womb, prevents the escape of the dead one, and thus being kept in the womb until the delivery of the other takes place, becomes compressed or mummified; when abortion suddenly sets in and nothing is prepared for its being carried to a successful termination, the mother becomes exhausted by ineffectual efforts, and soon passes into a critical condition; abortion differs from normal parturition chiefly in the state of the neck of the womb.

Abortion is always a serious accident if only from the loss of the foetus. It is frequently complicated by hemorrhage; which

may have been the first cause of the action of the womb; it may result in the rupture of the womb from the efforts the animal makes to overcome the resistance offered by the neck of that organ; indeed we may have the usual complications that attend parturitions. But in many cases the complications are few and trifling, the animal experiences very little inconvenience when the accident occurs before the fifth month, the secretion of milk is generally interrupted, often for a year, as the udders have not had time to experience the reflex or sympathetic influence which stimulates them into activity; when however it takes place in the last half of pregnancy the secretion may be established, though the yield is usually diminished, and the glands do not furnish their usual quantity until the next pregnancy; abortion may produce protrusion or prolapsus of the uterus and even the rectum. When abortion takes place during the latter half of pregnancy, the foetal membranes are frequently retained, wholly or partially.

In the simplest cases of abortion "heat" appears in the cow in from one to two weeks after, the abortion and conception may occur then; but frequently impregnation does not take place until after several returns of "heat" and often a whole year elapses before impregnation. In other cases "heat" does not appear until the full interval of regular pregnancy has elapsed, and then the animal conceives almost as readily as before the mishap. Another very common result is the tendency to abortion after every conception, while with some other animals there remains an almost persistent state of "heat" accompanied by barrenness.

DIAGNOSIS.—In the diagnosis we have to determine if abortion is in progress, and to do this in time to prevent it is not easy; although, it is very easy to distinguish during, or after the expulsion of the foetus. But when abortion first manifests itself, the symptoms attending it are very misleading.

EPIZOOTIC, ENZOOTIC, OF INFECTIOUS ABORTION.—This differs from sporadic abortion, particularly from its attacking all pregnant animals.

So long ago as the end of the last century, contagion or infection was believed to play the principle, if not the sole part in many outbreaks; for it was observed that when a cow aborted in a place where other pregnant cows were kept, these would abort in succession, until all, or nearly all had aborted. The bad hygiene of cow shed and stables appear to have no influence on abortion, as it appears quite as severely and readily in those which are well ventilated and cleaned as in those in the opposite condition; in fact nothing can so well explain the occurrence of particular outbreaks of epizootic or infectious abortion, as the presence of a contagious infection.

It has been proven and established by microscopical investigation, that on the lining membrane of the vagina and vulva there is constantly found a minute fungus mixed with the mucus, which is a kind of bacilli or microbe. Toward the period of parturition these bodies become extraordinarily abundant; and they seem to cause the decomposition of the foetal membranes and their expulsion; when the placenta and membranes are retained and putrify in the womb, these microbes are extremely numerous.

It has been asserted that it is sufficient to introduce into the vagina some of these microbes, which will multiply there, and penetrating to the womb, commence their work of decomposition to produce abortion. In cases where these microbes were inoculated in cows which were pregnant from five to seven months, in twelve, fourteen, twenty-one days after the inoculation they aborted. It has also been shown that by smearing the canal of the vagina of a pregnant animal to a certain depth with the matter from the expelled membranes of one which has been delivered, abortion can be induced. There is sufficient proof that infectious abortion is caused by a specific germ or microbe, that when transmitted from one animal that has aborted, or from the aborted foetus, or its envelopes to another pregnant animal of the same species will cause it to abort.

The microbe may obtain introduction to the genital passage through actual contact with these matters, or the air may carry it to them when the discharges have become dried.

In the animal which has aborted the previous year, and is afterwards barren, a mixed variety of microbes will be found, while the matter obtained by scraping the lining membrane of the womb gives a slightly acid reaction, which is undoubtedly, the cause of the animal being incapable of impregnation, as the male generative germ cannot retain vitality in other than an alkaline medium.

SYMPTOMS.—It is rare that this kind of abortion occurs before the first third of pregnancy has passed; more frequently it occurs during the second half of pregnancy. There are no premonitory symptoms except perhaps a trifling uneasiness for a few hours previous, with sinking of the flanks, and descent of abdomen. The animal generally looks well and hearty, and yields its supply of milk as usual; and soon after the foetus is expelled, apparently without any effort or inconvenience, and along with its membranes, "if these are not ruptured," with or without them when they are ruptured.

It is rare however that the ruptured membranes are ejected immediately after the foetus; as a rule they are retained, particularly when pregnancy is advanced; when the membranes come away slowly the animal generally loses its appetite and condition, goes off its milk, and sometimes perishes. If the animal recovers "heat" appears unnaturally frequent, though conception is infrequent and barrenness common; and on the other hand, there are some animals which expel the membranes quickly, conceive soon after, but again abort as readily, perhaps three times in the course of a year. The foetus is usually dead, though when it is expelled during the second half of pregnancy, it may be alive, but it is weakly and soon dies even when born near the termination of pregnancy. These newly born animals make a rattling noise when breathing, accompanied by discharge of a rusty colored mucilaginous fluid from the nostrils, they are attacked by diarrhea and are always emaciated and flabby.

A FEW ANIMAL DISEASES OF INTEREST TO THE GENERAL PRACTITIONER OF HUMAN MEDICINE.*

By GEORGE R. WHITE, M.D., D.V.S., NASHVILLE, TENN.

The title of this paper suggests the necessity for the study of Comparative Medicine by the human as well as by the veterinary practitioner. To obtain the requisite amount of knowledge of comparative medicine, the relationship of human and veterinary medical science should be brought into closer contact. In other words, the practitioners of these two great branches of medical science should co-operate to the fullest meaning of the term and work together hand in hand for the relief of suffering humanity and the uplift of the human race. Knowledge disseminated in such a manner would be well and thankfully received.

From the standpoint of science, animal diseases of any nature should interest the human physician, but he should be doubly interested in those diseases of animals which are transmitted directly or indirectly to the human race.

The diseases which are directly or indirectly transmissible to man are not so numerous but that any progressive practitioner could by a little study master them. The law of self preservation should impel him to do this if for no other reason.

The time has long since arrived when the human practitioner as well as the practitioner of veterinary medicine should have a more comprehensive idea of the scope and extent of available knowledge of comparative physiology and comparative pathology. I dare say that none of you who are present on this occasion will gainsay the above assertion. The relationship of

* A paper read before the Nashville Academy of Medicine and Davidson County Medical Society, May 31, 1910.

diseased meat and impure milk to public health, is a question which should vitally interest every one, especially the general practitioner of human medicine. The proper regulation and control of a Municipal Meat and Milk supply requires stringent laws and their diligent enforcement under the direction of a well qualified and non-political Board of Health. In their enforcement the health board should avail themselves of the united services of the bacteriologist, the chemist, the physician and the veterinarian, together with the co-operation of the progressive dairyman and butcher.

The individual technical knowledge of any one of the above mentioned scientists is not sufficient to cope with so complex and momentous a problem. Their united knowledge together with their most diligent efforts are absolutely necessary if the public health is properly subserved.

The diseases of animals that should be of special interest to the general practitioner of human medicine are those diseases which are transmissible to man indirectly through the medium of meat and milk or those which are transmitted by direct contact, or direct contagion.

In the light of our present day knowledge, the qualified general practitioner of human medicine should be able without hesitation or unnecessary delay to make a reasonably correct diagnosis. He should furthermore be able to as quickly recognize the possibility or probability of the disease in question being of animal origin. If from animal origin he should say without hesitation whether it has been transmitted through meat or milk or by direct contagion.

I shall not burden the members present in enumerating the various symptoms of the numerous diseases as observed in the animal. Neither shall I go into any elaborate description of any of them as that would be as useless as it would be burdensome. Suffice it to say that most of the diseases that will be mentioned, present definitely well defined symptoms whereby their diagnosis is made easy to the qualified veterinarian.

ANTHRAX.

Anthrax is a true septicaemia caused by the bacterium anthracis and is one of the oldest of the known infectious diseases of animals. It is readily communicable to nearly all warm blooded animals.

It is communicable to man by the alimentary tract through the medium of meat and milk or any other food containing anthrax bacilli.

It is transmitted by infection of skin wounds and in this form is known as "Carbuncle Disease" on account of its local manifestation. By inhalation the bacillus may enter the respiratory tract.

Anthrax is of especial historical interest from the view point of bacteriology as it was the anthrax bacillus which has the distinction of being the first disease-producing germ, stained, isolated, cultivated and described, by the late Prof. Robt. Koch in the year 1875. This was the beginning of our present day knowledge of bacteriology.

GLANDERS.

Glanders is a contagious disease of the horse and many other animals. It is directly transmissible to man by actual contact with the glandered animal or by handling harness, curry combs, brushes, or other articles which have come in contact with the infection. It is caused by bacillus mallei, and chiefly attacks the lymphatic system. Glanders rapidly terminates fatally when it attacks man. However, horses may linger for months or even years with this loathsome and dangerous malady. Veterinarians, stable attendants, and others closely associated with horses are particularly liable to infection.

FOOT AND MOUTH DISEASE.

Foot and mouth disease is a highly contagious disease of animals, especially cattle. Its specific germ has not yet been isolated and cultivated. It manifests itself by ulceration around the feet and in the mouth. Foot and mouth disease first ap-

peared in America in 1870, was stamped out after spreading over several of the Eastern and New England states. There have been at least two other widespread outbreaks during recent-years which caused great anxiety and heavy financial losses. America is now free from foot and mouth disease infection, however it is liable to reappear at any time from foreign sources unless rigid quarantine measures are constantly enforced. This disease is transmitted to man through the medium of milk from affected cows.

TRICHINOSIS.

Trichinosis is a parasitic disease due to *trichina spiralis* which becomes imbedded in the muscular tissue of animals, principally swine. This disease is transmitted to man through the medium of infected meat, which has been eaten raw or imperfectly cooked. Upon the ingestion of meat containing living trichina the parasites are liberated through digestion of the parasite-containing sacs and their surrounding capsules. These in time develop into mature worms in the intestinal tract. The male parasites only live for a short time. After death they are discharged with the feces, while the females penetrate into the crypts of lieberkuhn and deposit their young. These young parasites are taken into the blood and are deposited by it into all parts of the body, thereby gaining access to the muscular tissue. After becoming imbedded in the muscular tissue they begin to migrate or wander in different directions which accounts for the excruciating pain of this disease. Not less than 2 per cent. of all American hogs are infected with *trichina spiralis*. When this parasite invades man the mortality will average 30 per cent.

Cow Pox.

The specific cause of cow pox (*variola bovina*) is not definitely known. A number of different micro-organisms have been isolated but no experimenter has yet been able to reproduce the disease in other animals by the injection of either one of the suspicious varieties yet found. We do know that the virus of

cow pox is quite virulent unless exposed to direct sunlight or to the action of germicides.

In the absence of vaccine protection cow pox is readily transmitted to man by direct contact with affected animals.

ACTINOMYCOSIS.

Actinomycosis is an infectious disease caused by the Ray fungus.

This fungus gains access to the tissues—usually the cheeks, jaw or tongue of cattle—through wounds or abrasions in the buccal mucous membrane. These fungi multiply and by their irritating effects on the soft tissues and bone stimulate the formation of new growths, which in many instances attain great size. These masses have a tendency to suppurate and sometimes slough. The natural habitat of the Ray fungus is on grasses and plants. Rye and barley, the beards of which penetrate or abrade the mucous membrane, thereby allowing the fungus to invade the tissues.

Inhalation of the fungus produces nodules in the lungs, which at a casual glance may be mistaken for tuberculosis. Actinomycotic lesions have been observed in every organ of the body, but in the great majority of the cases the jaw alone is involved.

When the udders of cows contain the actinomycotic nodules, the Ray fungus may escape into the milk and thereby infect man.

Man may also become infected through the medium of eating raw or imperfectly cooked meat from actinomycotic animals. Especially is this true when the affected parts are used for human consumption. It may also be transmitted by infection of open skin wounds which have come into contact with the fungus containing pus.

TAENIA ECHINOCOCCUS.

Tænia Echinococcus is one of the most widespread tape worm infections of dogs found in this country. Many other animals, including man, harbor the cystic form of this parasite. These ova (*Echinococcus Polymorphus*) are the direct cause of Hy-

datic Cysts of man, who is its intermediate host. In the cystic form it is an extremely dangerous parasite. This disease is spread by dogs devouring the parasite-containing offal from infected hogs, cattle and other animals. The detached segments of the tape worm pass from the dog with the feces to the ground where they liberate numerous ova. These ova, or microscopic eggs, become distributed over the ground and finally contaminate the water and food supply of man. In man the Hydatid Cysts may develop in the brain and elsewhere, producing distressing symptoms and fatal results. Hence it will be observed that the destruction of Echinococcus containing organs and parts of infected carcasses by the meat inspector is of great health and sanitary value.

BEEF MEASLES.

Beef Measles is the larval stage (*Cysticercus Bovis*) of the common "Beef tapeworm" (*Tænia Saginata*) of man. The ox is its intermediate host. The ovum upon reaching the stomach of the ox is hatched into an embryo, these embryo penetrate the tissues and gradually migrate to various parts of the animal's body where they form cysts (beef measles). Should a human being eat raw or imperfectly cooked beef infected with these cysts containing the living larva, they would become infected with that widely distributed tapeworm known as *Tænia Saginata*.

PORK MEASLES.

Pork Measles is the larval stage (*Cysticercus Cellulosæ*) of the common "pork tapeworm" (*Tænia Soleum*) of man, which is as you all know the Armed Tapeworm, and difficult of removal. Each segment which is passed to the ground with the feces contains many ova. The ova infect the water and food supply of the hog which is its intermediate host. In the hog's stomach the ova hatch the embryo, these embryo penetrate the intestinal wall and migrate into the muscular and other tissues where they form cysts (pork measles). Should man eat raw or imperfectly cooked pork infected with the cysts containing live

larva, he would become infected with the tapeworm known as *Tænia Soleum*.

BOVINE TUBERCULOSIS.

There is available at the present time indisputable evidence to convince the most conservative that bovine tuberculosis is readily transmitted from the cow to man through the medium of milk, butter and meat. When we realize that not less than 10 per cent. of the dairy cows supplying Nashville with milk have been found by tuberculin test confirmed by post-mortem examination, to be affected with tuberculosis we are warranted in concluding that a certain per cent. of the tubercular patients in Nashville contracted the disease from bovine sources. It was only last week that the writer found twenty-two tubercular cows in a single dairy herd which was supplying Nashville with milk. The local situation warrants the most stringent enforcement of the present laws, relative to dairy inspection. While our present system of dairy supervision is better than formerly, I have no hesitancy in pronouncing it a mere farce in many respects.

RABIES.

Rabies is an acute infectious disease transmitted from animal to animal or from animal to man by the bite of rabid animals or by direct inoculation. It is not possible to transmit rabies through the medium of milk or meat of affected animals, neither is it possible to become infected by mere direct contact with the rabid individual. Rabies appears most frequently in the dog and by him is disseminated to other animals, usually in a circumscribed neighborhood, and the result is that numerous human beings may be bitten before all the affected animals are destroyed. All warm blooded animals are susceptible to rabies. The period of incubation varies from 18 days to as long as two years. The infective virus of rabies exists in the spinal cord, brain and saliva of the affected animal, it has never been found in the blood. It is not necessary for me to enumerate all the symptoms of rabies as observed in dogs. Suffice it to say that whenever a dog is ob-

served with lower jaw dropped (mouth open) and dirt on tongue, the case is suspicious and the animal should either be killed or confined. If a person has already been bitten never kill the dog until it has been examined and the case diagnosed by a qualified veterinarian, after which have the veterinarian's diagnosis confirmed by a bacteriologist. The finding of Negri bodies is diagnostic. If the animal is really rabid, then without hesitation or unnecessary delay suggest Pasteur treatment.

In conclusion I would like very much to emphasize the importance of a Chair of Comparative Medicine in each medical college faculty, and the necessity of each practitioner of human medicine devoting at least a part of his leisure time studying Comparative Medical Science. If a man can afford to devote three years to the study of veterinary medicine and four years to the study of human medicine, making a total of seven years of his life to the study of medical science in order to qualify himself to treat horses, dogs and cats, then how can there be any valid objection to at least requiring a prospective practitioner of human medicine to better qualify himself before undertaking the responsibility of dealing with valuable human lives.

IN reproducing a part of an account of the annual field day of the Louisiana Sugar Planters' Association from the New Orleans *Daily Picayune* of June 10, in our July issue, we unconsciously reproduced some errors of the *Picayune* reporter. Significant among them was the statement that Dr. Dalrymple had expressed his hope that the legislature would see fit to make an appropriation so that the work could be properly carried on, and stated that Secretary Wilson had been asked for an extra appropriation of \$100,000 to complete the work." This \$100,000 referred to the initial appropriation of three or four years ago, when Dr. Dalrymple was one of the delegates who went to Washington in the interests of this cause. Since, then the federal government has appropriated \$150,000 and \$250,000, and no doubt will have to appropriate more before the work of tick eradication is completed.

SOUTHERN ILLINOIS VETERINARY MEDICAL AND SURGICAL ASSOCIATION meets at Anna August 2, 3, 4.

GRANULAR VENEREAL DISEASE OF CATTLE—INFECTIOUS VAGINAL CATARRH—INFECTIOUS VAGINITIS.

BY A. I. SORENSEN, V.S., MODESTO, CAL.

In my practice in a large dairy community, I have come across a disease which from the symptoms I consider the same disease reported by European writers and also by Dr. W. L. Williams of the N. Y. S. V. C., at Ithaca.

The disease so far as known is purely venereal, transmitted generally, if not always, by coition, though being capable of being transferred by other means.

The malady has been recognized for twenty years and has been observed and described by numerous veterinary authors in Germany, Switzerland, Italy, Denmark and Austria. While not of importance, as related to the life of the affected animal, it becomes in other respects a very serious malady as affecting the dairy interests. It is highly contagious, affecting in dairy zones from eighty to ninety per cent. or even more of the total number of cows.

It is a fertile cause of enzootic abortion. Some reports state that more than fifty per cent. of the cows abort. After the malady has prevailed in a dairy herd, a large proportion of the cows become sterile, partly because of cystic ovaries, accompanied by nymphomania. In fact, this malady appears to be one of the common causes of nymphomania with ovarian cysts.

During the course of the malady and as a result of the direct irritation from the abortion and other interruptions, there is a great loss of milk, it deserves to rank among the most serious of dairy plagues.

ETIOLOGY.—According to Ostertag and Hecker, the affection is due to a streptococcus consisting of six to nine cocci, which are held together by a delicate capsule.

In artificial cultures, either alkaline or acid, and at the body or room temperature, the organ grows vigorously.

The disease is readily induced in healthy cows by vaginal inoculation with pure cultures or by discharges from the vagina of a diseased animal.

Attempts at experimental transmission to other animals have proven negative. Sometimes the transmission of the disease occurs through ordinary contact without sexual intercourse. It may be accidentally transmitted to heifers and calves.

SYMPTOMS.—According to Ostertag, a vaginal catarrh becomes established within two or three days after artificial inoculation, while, by natural or coital infection, one or two days elapse before the catarrh becomes apparent. Rabiger observed vaginitis and catarrh in twenty-four hours.

The first symptoms of the malady to be noted consist of swelling of the labiae of the vulva and diffused or streaked reddening and swelling of the vulvo-vaginal mucosa, with tenderness of the parts. The inflamed area is covered somewhat by a muco-purulent discharge.

A day or two later there develop in the vestibule of the vulva along the floor of and sides about the clitoris numerous small nodules $1/16$ to $1/8$ inch in diameter, which are at first a dark red, later becoming lighter in color. These nodules are smooth and of very firm consistence and somewhat regularly arranged in panel rows.

The nodules consist essentially of hypertrophied papillary bodies. If the vulva is held open and reflected light thrown into the cavity, the nodules can be readily distinguished; they are also readily recognizable by the sense of touch.

The mucous membrane is swollen, red and sensitive, bleeds easily upon manipulation and is covered by an inodorous mucus or muco-purulent secretion, which, flowing from the vulva, soils the labia, tail and adjacent parts, where it dries in brown crusts.

or, if in larger amounts, may flow from the vulva in long, ropy masses. The denudation of the mucosa renders it quite sensitive to the passage of urine over it, and the pain and irritation in the part tends to cause urination with abnormal frequency.

When the disease extends into the cavity of the gravid uterus, which appears to be almost the rule, abortion occurs, while in the non-pregnant cow, nymphomania and sterility, are common results.

The acute stage of the malady continues for twenty to thirty days, when the swelling and tenderness abate, and the nodules lose their red color to become somewhat yellowish or grayish, perhaps somewhat transparent, but the discharge and the granules persist for ninety to one hundred days or more.

Bulls show a comparatively high resistance to the infection, and, though they constitute the chief vehicle for the contagion, apparently suffer slightly, if at all, in most cases.

When affected, they show analogous symptoms to those observed in the cow. The penis is studded over with nodules like those in the vagina, which are easily seen when the organ is extended. Erection, copulation or manipulation of the penis causes bleeding. There is a muco-purulent discharge from the sheath of the penis, which adheres to and soils the parts.

TREATMENT.—The handling of the malady consists essentially of local disinfection, and, as in other localized infections, there should be a thoroughness in application conformable to the existing circumstances.

Safe recovery includes the successful destruction of the organism in all these organs and tissues. The disinfectants used must not be too irritant to the highly sensitive mucosa of the genital passages, since they induce straining, inflammation, adhesions and other disagreeable consequences. Disinfecting douches, ointments, powders and tampons have been commended, all having a common aim. Among douches, two to two and one-half per cent. lysol creolin and similar drugs; five per cent. silver nitrate, one per cent. potassium permanganate, five per cent. ichthyol; likewise with powders there is a wide variation, such

as zinc sulphate, alum, tannin and others mixed with some inert substance. In this group, which should also mention iodoform, because of its local anaesthetic action, its weight, which would cause it to drop into the depression between the elevations of the mucosa and its comparative insolubility, causing it to remain for twenty-four hours or more, presumably to be slowly converted into iodine. It has one objection in the dairy, its odor, which is liable to contaminate the milk. The prophylaxis and control of the malady is highly important and, in a general way, demands the enforcement of the usual regulations for the control of contagious diseases.

DR. R. W. POOLE, Forest River, N. D., says: "I could not get along without the REVIEW, as it is the best veterinary journal that I have ever taken.

At the Fifth Annual Health Conference at Baton Rouge, June 21, 22, 23, under the auspices of the Louisiana State Board of Health, Dr. Dalrymple gave an illustrated lecture on "Some Conditions Affecting Public Health."

THE GLIDDEN TOUR.

Ten little Gliddenites
Started out so fine;
One got a punctured tire,
Then there were nine.

Nine little buzz-buggies
Trekking 'cross the State,
One bust a carburator,
And then there were eight.

Eight little automobiles
Smelling up to heaven;
Puff! goes the gasoline,
Then there were seven.

Seven little touring cars
In an awful fix;
One stuck fast in the mud,
Then there were six.

Six on the Glidden run,
Glad they're alive,
One exceeds the speed limit—
Then there are five.

Five little benzine buggies,
Oh, you perfect score!
One broke a steering gear,
Then there were four.

Four little dusty cars,
Weary as can be;
One lost a spark plug,
And then there were three.

Three little old machines,
All tried and true,
One struck a nanny goat,
Then there were two.

Two little autos
On a Glidden run,
Another one goes up in smoke,
Then there was one.

One little Gliddenite,
Thinking that he'd won,
Bang! ? ? @ % $\frac{7}{8}$ $\frac{1}{4}$! Biff! |||—"

Then there was none.

Cincinnati Times-Star.

A PRACTICAL BANDAGE.*

BY DR. UNTERHOESSEL, MUELHEIM, RHEIN, GERMANY.

For many years past I have used a bandage which, because of its convenience of application and permanency, will undoubtedly gain many friends. It has many advantages over the bandages in ordinary use, and is a permanent dressing made of adhesive antiseptic material.

Heretofore in the *treatment of panaritium* in cattle, *hoof amputation* has had no satisfactory treatment, there has been no bandage that would prove permanent and *resist moisture and exposure to infection from stable manure*. The usual cheese cloth or even the linen bandage, though coated with tar, permits ready absorption of liquid manure to the decided disadvantage of wound healing. Such dressings, too, especially when applied to the lower extremities, prove but temporary and soon rub through and separate from the diseased part to which they have been applied.

The bandage I have used has proved ideal in just these conditions. It forms a covering like a rubber shoe when applied to hoof or claws. Being absolutely waterproof, it forms a safeguard against infection and moisture. It can be readily applied wherever a bandage can be used, over dry or moist cotton, and after two or three turns is fixed because of its great adhesiveness—an advantage in fractious animals not to be lightly passed over. Tying is by no means necessary, the ends adhere without special preparation, simply rubbing over with the palm of the hand is sufficient to secure a firm closure.

* *Berlin Veterinary Weekly*, February 3, 1910.

The durability of this material is quite considerable. After operation on the claws and amputations, I have seen bandages efficient for weeks after application. And in the local dairies the hygienic conditions were quite objectionable since bedding was used very economically, and the animals frequently stood in manure and filth. Yet the inner portion of the bandage remained clean and uncontaminated. This is a decided advantage which is of prime importance in panaritium. A suitable dressing after the primal operation will prevent further infection and result in recovery as has been pointed out by Francke in his tests with Thigenol.

Although this bandage forms an absolutely impermeable dressing almost like a rubber shoe, it still does not in any way interfere with the normal healing of wounds. Penetration of air to the tissues is still sufficient to maintain their vitality. By the use of cotton this condition can be controlled at will. Besides in conditions affecting the claws, this bandage is to be recommended also in all diseases and injuries of the hoof. It is of advantage in all cases in which marked and permanent pressure is desirable, especially since the pressure can be regulated at will. After many extensive hoof operations I have never observed prolapse of the soft parts when the bandages had been applied. Especially after the operation for radiating cancer when a pressure bandage is of the greatest necessity this bandage proved exceedingly serviceable.

In canine practice, too, the bandage is very useful. In locations in which permanent dressing are usually impossible, as at the end of the tail and about the joints, this bandage can readily be applied because it adheres so well. Last, but not least, it must be recommended in the cure of chronic tendon and joint thickening. Its use is indicated wherever formerly water glass and like dressings were used. The bandage adheres on both sides, so by reversing it is readily adapted to all contours forming a fixed tubular, occlusive dressing. In chronic enlargement of the tendons, galls, etc., the bandage forms a compress dressing of unusual permanency and complying with all possible requirement of

such a dressing. The degree of pressure is easily controlled by the operator.

The bandage is furnished in widths of 5 and 6 cm. and 4 metres long, fully sufficient for the average dressing. They can be specially prepared of any length desired. Widths of 2 and 3 cm. are made especially for tendon and joint enlargements.

After a trial extending over many years I can recommend the bandage warmly to all practitioners and especially to those who have many cases of foot and hoof diseases. It is certain that after a fair trial the bandage will continue to be used because of its great merits and moderate cost.

TO THE HONORARY MEMBERS OF THE ALPHA PSI FRATERNITY—As the Alpha Psi Fraternity is now in the fourth year of its history and its honorary and alumni members have increased to most gratifying numbers, the council feels the pressing need of an honorary and alumni directory to be placed in the hands of every Alpha Psi, that he may have at his command each and every brother's address for business and professional, as well as social and fraternal intercommunicating purposes.

That the above need may be gratified, the National Council is compiling a combination Honorary-Alumni Directory to be sent to press no later than Sept. 15, 1910, and in order to complete the work of the present administration, it is earnestly urged that each honorary member forward the following data to National Secretary Dr. R. E. Warren, 316 Live Stock Exchange, Chicago, Ill., at his earliest convenience: (a) name, (b) chapter that conferred the honorary membership, (c) degree or degrees (either veterinary or other educational degrees), (d) institution or institutions granting degrees, (e) year or years obtained, (f) line of veterinary work pursuing at present, and (g) location.

Should further detail regarding the above be desired, I will gladly forward same upon request.

Close attention to and strict observance of this order will be highly appreciated by the council.

Fraternally yours,

A. F. SCHALK,

President of National Council, Agricultural College, No. Dakota.

REPORTS OF CASES.

CATALEPSY IN A PONY.*

By F. C. GRENSIDE, V.S., New York, N. Y.

On December 26 last I was called to see a high-class, 14.3 pony gelding of considerable substance, presenting the following symptoms:

Every five or ten minutes the anterior extremities and neck became the seat of a violent tonic spasm lasting about five minutes. The fore legs and neck became perfectly rigid, but the hind extremities were unaffected. Owing to the agony caused by the spasms, the animal kept moving the hind legs, which resulted in propulsive efforts, so that the fore legs, which were as stiff as stakes, supported the body, and the action of the hind ones caused the animal to slide around the box stall on the fore legs. Relaxation of the paroxysm would gradually take place, and the subject would stand looking the picture of misery with head drooping, ears pendulous, and eyes closed.

In sliding around the stall the eyes became subjected to irritation from scraping and bumping against the walls, so that superficial inflammation was set up in them, and the eyelids were kept closed, and there was a muco-purulent discharge from them. For the first few hours, the attacks were frequent, and it was seldom that there was a longer interval than about ten minutes between them. They afterwards occurred at longer intervals, but did not abate in severity. As the victim became weakened from their recurrence, he would topple over forwards and sideways during a paroxysm, and lie there after relaxation came, in a sub-conscious, exhausted condition. A few hours after these seizures began, the temperature rose to 105° Fahrenheit, and did not become normal for several days after they ceased. In the

*Read before the April meeting of the Veterinary Medical Association of New York City.

intervals between the early paroxysms, the pulse showed strength, and would become almost normal, but as the animal became weakened from the attacks, it was frequent and asthenic. The bowels were inactive and responded very tardily to two and a half drams of aloin and repeated enemas. In addition to the physic an ounce dose of bromide of potash was given early in the attack. After this, bromide of soda was substituted for the potash, and an ounce given every four hours until three doses had been administered. Finding no beneficial effect from this treatment, I gave one grain and an eighth of apomorphine hypodermically. This was about ten o'clock at night, and no more paroxysms were observed until about ten o'clock the next morning, when they returned in all their former severity, but at longer intervals. I then gave another dose of apomorphine of one grain and no more seizures occurred, but the animal was extremely weak, and took no nourishment voluntarily. He would, however, occasionally take a few mouthfuls of water. Becoming alarmed at his weakness and continued inappetence, I began to drench him with gruel which seemed to revive him, and he gradually took to eating, and regained strength daily. In about two weeks his owner was riding him again, giving him gentle work at first, and he soon regained his normal strength and condition, and there has been no recurrence of the trouble.

This attack was undoubtedly due to too much feed and insufficient work. The owner of the pony thought a great deal of him, and was most anxious to have him looking well. He was continually asking the groom to feed him well, which he used to do whether he was working or not. On this occasion the owner did not come to ride the pony for four days, and the groom continued to feed him freely on oats and hay, and a mash every day. From such treatment we would naturally expect an attack of azoturia or, in a susceptible subject, one of lymphangitis, but in this case it led to this very unusual result.

From the available literature upon the subject, the case described would not be looked upon as true catalepsy by many authors on account of lacking the characteristic symptom of plasticity. In this case the affected extremities could not be bent into a position which they would maintain so it might be more correctly described as a cataleptoid attack. Professor Law describes two forms of catalepsy, viz., the tetanic and paralytic. This case conforms very closely to the descriptions he gives of the former.

HERMAPHRODISM IN A MULE COLT.

By R. H. REEDS, V.S., Hazel Dell, Ill.

The urethra is open from just below the anus down to where the rudimentary vulva is attached. The colt micturates just be-



low the anus. Just below the vulva is situated the penis, it is directed backwards and downwards. The testicles are retained in the inguinal canal and are situated anterior to the penis. The owner informs me that the penis is capable of erection. The penis is not visible, but can be felt by passing the finger up the

sheath a little way, but when erected, the owner says, the anterior end of penis is visible. In other ways the colt is normal, and is in good health.

SOME CASES FROM NOTE BOOK.

By R. A. STOUTE, Government Veterinary Surgeon, Barbados, W. I.

As the following cases of azoturia present peculiar symptoms, they may be of sufficient importance to be published:

Called at 7.30 p. m. to see gray horse, the property of Hon. F. J. C. History: The horse had been driven about eight miles and put away apparently well; on groom going to stable half hour later, the horse was found lame. I was telephoned for.

Symptoms.—Horse apparently in great pain, standing with off hind leg elevated; respirations and pulse both increased in frequency; unfortunately I did not have my thermometer and was unable to get correct temperature.

I examined the hoof as carefully as I could by lamp light, but could find nothing wrong. On attempting to make the horse move, I found he was also lame in the other leg.

I left, intending to return next morning, remove the shoe and again examine the hoof. Before leaving, I gave the groom instructions to watch the horse and report anything noticed by him next morning. On returning next morning, I was shown some urine passed during the night. On further examination, I found a well-marked case of azoturia. He presented no symptoms of that disease at the time of my first visit.

MULE.—The next case was a mule, one of four being driven to town from a farm nine miles from the city. After being driven about three miles, the animal began to show usual symptoms of azoturia. The carter persisted in driving him on. After going about a mile more, as he was unable to go further, he was left at a farm quite close to the road. On being led in the pen, he immediately went down.

On my visiting him, I found in addition to the usual symptoms of azoturia, that the muscles of the near shoulder were swollen to an enormous size and were intensely hard, the thickest part of the swelling being, at least, ten inches thicker than normal.

Azoturia assumes a very mild form this part of the world, the majority of cases would recover spontaneously. This is probably due to the slight change in temperature recorded in this island. We may get it as low as 60° Fahrenheit, and as high as 90°. (A fine climate for those wishing to avoid extremes of heat or cold.)

Owing to above conditions, I have never lost a case of azoturia in twenty-six years' practice.

My treatment I should like tried, although quite simple and the surroundings so different—Tincture cantharides, tincture hamamelis, aa, 10 minims every hour and hot applications to loins.

SOME ABNORMALITIES FOUND IN SLAUGHTER HOUSE.

A complete hermaphrodite goat. The penis protruded for about half inch through vulva, passed through floor of vagina direct to bladder. Vagina and uterus were normal; at the end of one fallopian tube was a perfect testicle, with epididymis and vas deferens complete; a small spermatic cord to the end of which was attached an ovary; on the other side of the uterus were two fallopian tubes, at the end of one a testicle, etc., on the end of the other an ovary.

A two-year old ox, in which the urachus was still intact.

An ox with no trace of gall bladder.

Two and sometimes three gall bladders in hogs are occasionally seen.

TRICHINOSIS.

By JOHN OLIVER, V.S., Columbus, Miss.

Some three weeks ago there was brought to my hospital a Berkshire boar, which the owner stated had been suffering some little time. The only symptoms evinced were those of great dyspnoea and swelling of the shoulder muscles, also the muscles in the throat region. The history of the case was rather obscure, and I came to the conclusion that it was a case of "a pig under the gate" and diagnosed it as an injury.

The case did not yield to treatment so I decided to destroy the animal. Upon post-mortem examination I found all the muscular tissue in the body including the heart and diaphragm

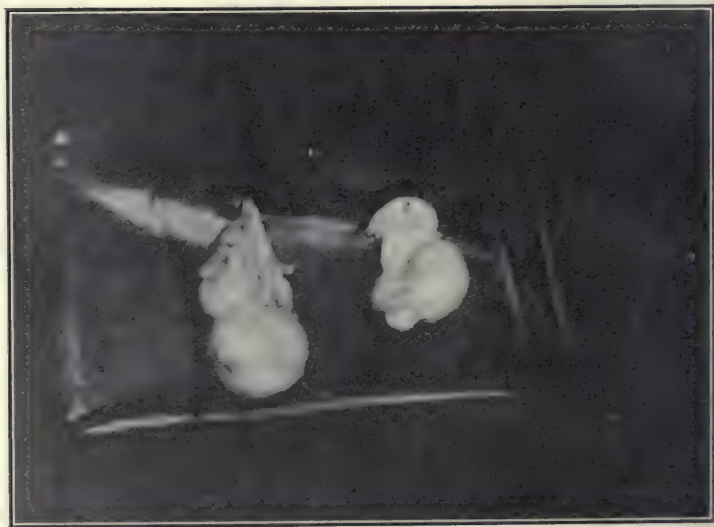
infiltrated with watery cysts the size of a grain of wheat, or a little larger. In the cysts were little centers which somewhat resembled a caseous mass the size of a mustard seed. The muscles were completely degenerated and the sheaths of the muscles held a watery pulpy mass with thousands of the cysts I have just described.

It is an easy matter to ascertain the cause of the labored breathing because all the muscles were greatly distended, and those in the region of the throat were pressing the larynx. I took a specimen to the City Hospital for examination, but have heard nothing definite from that source as yet.

Thus far I have called it trichinosis, and should like to have an expression from some of the REVIEW readers in regard to it.

CYSTIC TESTES WITH SECONDARY CYSTS.

By FRANK J. BAKER, D.V.M., Gouverneur, N. Y.



Weight 53 ounces. Removed from a fourteen-months'-old abdominal inguinal cryptorchid. Owned by John Hunt, DeKalb Jt., N. Y. Complete recovery.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

BY PROF. A. LIAUTARD, M.D., V.M.

WHITE HEIFER DISEASE [*R. G. Melville, M.R.C.V.S.*].—The author says: "It is widely known that white heifers, more frequently than other bovines, provide examples of imperforate hymen. Was this case one of them? If so, why had not the rupture thereof occurred during coitus"? Indeed, this two year old white heifer has been in labor, and when the hand is introduced in the vagina to explore it, it is found that from nine to ten inches from the entrance of the vulva, there is a complete obstruction, due to a membranous diaphragm, concave posteriorly and with its circumference attached on the vagina. There is no aperture whatever to be discovered even after a most careful research. The membrane was ruptured, about a pint of fluid escaped and was followed by the two fore feet and nose of a live foetus which was extracted without difficulty. It looked like one of a six months' gestation. Bucketful of brown viscid fluid of peculiar but not offensive odor was removed. "Assuming coitus to have taken place without rupture of the hymen, by what means did impregnation take place."—(*Vet. Record.*)

GASTRITIS IN A CAT [*Arthur Whicher*].—A six months' old kitten, which gave symptoms of gastritis, was treated with aperients, enemas, bismuth and other sedatives. Nothing relieved him and he kept up vomiting. He died the third day. He had acute peritonitis. Had swallowed a piece of string having knots at both ends, one of these being too large to pass out of the stomach, the other had made its way into the bowels, and the whole of the intestines had worked themselves on to the piece of string, with the knot in the stomach as the fixed point. The intestines were cut through and the contents had escaped into the abdomen.—(*Vet. News.*)

PARALYSIS OF THE LOWER JAW [*By the Same*].—Record of a case in which the jaw was completely paralyzed, with the lower maxillary dropped six to eight inches. Strychnia, potass. iodide, liniment and massage were useless. Electric battery gave little improvement after three days, and in a week the muscles would contract so that the teeth would get in apposition when the battery was acting. Gradually improvement set in and complete recovery followed after a few days.—(*Ibidem.*)

SOME PELVIC FRACTURES [*R. H. Smythe, M.R.C.V.S.*].—1. Horse received a severe kick on the hip. No lameness follows. Worked for a fortnight, when he becomes suddenly lame on the off hind leg. Besides the usual sign of lameness, hesitancy to move forward, dropping of the haunches, rectal examination revealed swelling on the shaft of the ilium; crepitus was heard. The animal was put in slings and recovered in a month.

2. While hunting this animal fell, showed a little stiffness and got over it. A week later, being ridden, he shied and suddenly was dead lame. Rectal examination was negative. Pelvic fracture was suspected. Animal killed. Comminuted fracture through the acetabulum, the shaft of the ilium and also the pubis.

3. Bus horse fell, no lameness, worked three days after and dropped suddenly lame on off hind leg. Great pain, profuse sweating, temperature 104° F., haunch dropped only after the second day. Rectal examination negative, no crepitation. The animal is slung, a charge put over the quarter, blister, a run out to grass, and work resumed after some time.

4. Fourteen-year-old gelding has been treated for spavin, and several months later is found lame in the stall. Usual symptoms, no dropping of the haunch, nothing detected by rectal examination. Killed, there was found a recent fracture of the posterior half of the pubis symphysis with displacement and a callus on the anterior half, probably that of a previous fracture.—(*Vet. News.*)

IMPACTION OF THE OMASUM IN A CALF [*D. Meadows*].—Calf about six months old is suddenly taken with delirium. Staggering, reeling, falling and knocking itself against walls and racks. The pupils were dilated and complete blindness apparently present. There were abdominal pains but no tympanitis. Mouth and muzzle very dry, and there was a history of previous constipation. Respiration quite normal. Pulse 90, full, hard and

irregular. The animal was held down and his head tied up short to prevent self injury. One ounce of chloral was administered in two doses an hour apart without results and followed by one and one-half grains of morphia subcutaneously. The animal went to sleep. The next day he was free from trouble and violence, but amaurosis and blindness remained. He had passed hard sticks of dung. Six ounces of magnesia sulfate with soft food completed the recovery.—(*Vet. News.*)

A TYPICAL CASE OF MALIGNANT CATARRH [*Same Author*]. Two year old bullock, in good condition, stood quietly in a barn with head down and general appearance of extreme weakness and dejection. His temperature was 105.6° F. Respiration 20 to 25, shallow and with a grunt. Pulse weak and irregular, 70 per minute. No pleurisy, no lung trouble except some râles and occasional cough. There were livid patches in and around the nostrils, mouth and tongue. Abundant discharge from the nose, but no ulcers. Eyes congested with conjunctivitis and keratitis and dense opacities. Hypopion was present in both eyes. Sinuses and base of the horns hot and painful. The prognosis was unfavorable. Stimulants, expectorants, gruel drenches and careful hygienic measures were recommended, but death occurred the next day. No post mortem was made.—(*Ibidem.*)

CHRONIC INCURABLE HOCK LAMENESS [*C.H.H.J.*].—A mare, cavalry horse troop, was found one morning suddenly and acutely lame. Being unable to put any weight on the off hind leg, she moved on three legs. The hock was the seat of the trouble. The animal was placed in slings where she remained some five weeks with the lameness having subsided and a large bony enlargement being on the antero-internal aspect of the hock. There remained a great deal of soreness which, however, kept improving for about two months when the lameness returned so severe that the animal was destroyed.

On boiling the tarsal bones, there was found an extensive callus of spongy bony tissue involving the anterior and internal surface of the head of the great and small internal metatarsal, also the scaphoid and large and small cuneiform; all being firmly involved and welded together by ankylosis. The inner lip of the trochlea of the astragalus had an ulceration with erosion of the cartilage. The origin and etiology of this case are doubtful. It was probably caused by a trauma of some kind. Some say

fracture, although there was no objective sign or positive evidence, but the symptoms were very suggestive.—(*Vet. News.*)

CHRONIC ABSCESS ON THE MESENTERY WITH FISTULA OPENING INTO THE SMALL INTESTINE: COLIC, ENTERITIS, DEATH [*H. Kendall, G.M.V.C.*].—This grey horse was taken ill with colic after returning from work one morning. Drench was administered. The animal remained sick all day, notwithstanding the treatment applied, and died late in the evening. At the post mortem there was found slight peritonitis, with the intestines filled with fluid. On removing them "a large ovoid mass, circumscribed and firm in consistency, was found in the mesentery and firmly attached to the intestines, though not occluding the lumen. This mass was composed of dense fibrous tissue with areas of necrosis throughout. The necrotic areas were composed of dirty semi-purulent material and communicated with the intestines by means of two irregular tortuous sinuses. At the periphery of this growth was an egg shaped abscess composed of thick greyish yellow purulent material. The lungs was affected with broncho-pneumonia, evidently the result of the mal-administration of the colic drench given in the morning."—(*Vet. Journ.*)

PARALYSIS OF THE ANTERIOR CRURAL NERVE [*E. Wallis Hoare, F.R.C.V.S.*].—Horse kicked while in harness, gets the near hind leg entangled, and when relieved is found very lame. While standing the animal keeps his foot on the ground. When called to move, just as the extension of the stifle is to take place, he drops on the affected side and the limb cannot carry weight. If attempt is made to lift the off hind leg, the animal cannot bear weight on the affected limb. Treatment consisted in blister on the stifle joint and a run to pasture for two months. Recovery was quite slow.—(*Vet. Journ.*)

FRACTURE OF THE PELVIS AND DEATH FROM HEMORRHAGE [*P. R. Thompson, M.R.C.V.S.*].—Aged eight years, this hunter walking down hill makes a jump and whipped round sharply went lame on the near hind leg. Taken away, to his stall, he is found shortly after laying down with the inside of the thigh of the affected side somewhat swollen. The animal is raised, crepitation is detected over the angle of the haunch and also by rectal examination. Before slings could be had to put him in, the horse

died. Result of the autopsy: fracture right across the neck of the ilium, the bone being crushed in many pieces, and laceration of the arteries causing fatal hemorrhage.—(*Vet.ourn.*)

UNCOMMON DENTAL FISTULA IN A DOG [*Prof. G. A. Woolridge, F.R.C.V.S.*].—Young bull terrier, eight months, has distemper and needs attention. He also has a small discharging wound under the jaw, on the right side of the maxillary space. When four months old, his mother had bitten him. The wounds had healed except that one. Probed, diseased bone is detected. Under cocaine anesthesia the tract is enlarged; the cavity cleaned and a loose piece of bone removed, which proved to be the permanent tusk of that side. The absence of the tooth had not been noticed before. Dressed with chinosol, the wound soon healed. The dog recovered of his attack of distemper.—(*Ibidem.*)

ITALIAN REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

FATAL SHOCK DUE TO RUPTURE OF THE CÆCUM IN A MARE [*Dr. Arturo Schiavelli*].—A five-year-old Irish mare refuses her food and has severe colic. Her temperature is 40.2° C. She is restless, pawing with her fore feet, looks at her flank, and now and then attempts to lay down. Colic from indigestion is diagnosed and treated with enemas, frictions on the back and loins, chamomile tea and walking exercise. After an hour she is apparently relieved and she is returned to her stall with directions to have a muzzle put on her head to prevent her eating her bedding. She is quiet, the respiration is normal and the temperature down to 38.5° C. No complication is looked for. When two hours later she suddenly makes a jump in her stall and drops on the floor where she lays flat on her broad side. She dies in about fifteen minutes before any treatment can be applied. At the post mortem the abdominal cavity was found containing dark fluid, the peritoneal and mesenteric blood vessels were gorged with blood, the stomach was distended with food and gases as well as the cæcum and colon. On the middle third of the arch of the cæcum there was a rupture about twelve or fifteen centimeters long and involving the three coats of the organ. The edges were

irregular, and infiltrated with blood. There was no evidence of internal hemorrhage.

The mediate cause of death was evidently the rupture of the cæcum, says the author, but the immediate cause may be attributed to nervous shock.—(*Il Nuovo Ercol.*)

A CASE OF PROLAPSUS OF THE RECTUM AND COLON IN A DONKEY [*Dr. Guiseppe Pellegrini*].—Aged one and a half years, this animal has this difficulty since his birth. It came out now and then and reduced itself without difficulty. At first it was no bigger than a man's first, but as time went by the prolapsed portion increased, and now it cannot be returned in position. The animal is gay, has good appetite, a normal pulse and temperature but the attention is drawn to the condition of the posterior part of the intestines which is protruding out of the anus. It is the rectum and colon which by the movements of the animal has become more or less lacerated. The prolapsus is hanging down forming a mass, bosselated, cyanotic, œdematous and cannot be reduced. The anus is also defectuous as, although it forms a round small prominence, it is dilated and superiorly divided toward the base of the tail. Amputation was decided and performed with the animal anesthetized with injections of stovaine. A cylinder was introduced into the cavity of the intestines, hemostasis obtained with an elastic band applied round it, and the amputation of the intestines was performed with sutures round the edges of the anus, which itself had its sphincter sewn up tight. The animal did well and returned home with directions that on account of the deficiency of the sphincter ani he should be submitted to special diet and made to carry a kind of belt with elastic ring to assist the firmness of the anus. The owner saw that this was done for some time, but soon neglected it and the prolapsus returned as bad as ever. The little donkey had to be destroyed.—(*Il Nuovo Ercol.*)

OSTEOSARCOMA OF THE JAW IN A HORSE [*Dr. Guiseppe Sivieri*].—The writer was asked to attend this eight-year-old animal for a swelling, roundish in form and about the size of a nut, which existed on the right branch of the maxillary in close proximity to the root of the first molar tooth. In hearing the history of the case, he thought it a single case of osteo-periostitis and prescribed the usual treatment for such. But contrary to his expectations the tumor enlarged and soon began to interfere

with mastication. Indeed, it grew so that it showed between the corners and first molar tooth with a fistulous tract from which grey ichorous bad smelling pus run out. It was a case of osteosarcoma, for which the animal was cast, the trephine applied upon the central part of the growth, the diseased osseous tissue was scraped off and a drainage tube introduced to allow a free discharge. After a number of days this was removed, the wound allowed to close, and the remaining swelling was treated with deep pointed cauterization. The result obtained was quite satisfactory.—(*Ibidem.*)

TRAUMATIC PERICARDITIS IN A MILCH COW—RECOVERY [*By the Same*].—Pregnant and within her term, this animal, aged three years, has shown symptoms of constipation. She gets a purge and is relieved. A few days later she is off again, standing with her fore legs apart, grunting with pain and coughing. She has not laid down lately. By auscultation the heart is found accelerated and a characteristic noise of fluid in the pericardium is heard which justifies a diagnosis of traumatic pericarditis. As the cow is nearly the end of her pregnancy the writer decides to wait a while rather than to send her to the butcher. He with her fore legs apart, grunting with pain and coughing. She lays down, eats well and on auscultation on the left side, a swelling is observed. It is elongated and measures several centimeters in length. Two days later, the cow gives birth to a well-developed calf. The swelling then has become fluctuating, an incision is made through it and a piece of wire, curved as a suture needle is extracted. It had made its way through the fifth intercostal space. After this, the cow recuperated and had no further trouble.—(*Ibidem.*)

PURULENT CONJUNCTIVITIS WITH CORNEAL ULCERATION AND STAPHYLOMA [*Dr. Nello Mori*].—This cat was four months old. When two months, she had slight conjunctivitis of both eyes, which was relieved by astringent applications. Now it has returned on the left eye, which seems covered with a white cloud. The eye is kept open and on the nasal angle, the membrana nictitans is protruding. The animal avoids to move his eye as much as he can. There is no wound nor any foreign body. Boric water lotions are prescribed. Two days later the eye is kept closed, and when the eyelids are separated sero-purulent nictitokerato-conjunctivitis is well marked. The treatment consisted in

washing with solution of sublimate. After a few days, the disease seems to be checked, but soon an ulceration of the cornea takes place notwithstanding the application of collyrium of atropine and cocaine. This ulceration is soon followed by the formation of a staphyloma which was removed. The after treatment which consisted in antiseptic lotions was quite long and tedious, but finally the animal got well, having only left a pale cicatricial leucoma, which did not seem to interfere with the sight of the animal.—(*La Clinica Vet.*)

STRANGULATED DIAPHRAGMATIC HERNIA IN A MARE [*Dr. Guiseppe Sivieri*].—Racing animal, eighteen years old, was taken sick with colic during one night and found in great suffering in the morning. She was given relief with subcutaneous injections of muriate of morphia and opium preparations left for her if the colic returned. Warm frictions all over the body were also prescribed, with rectal enemias of laudanum. After the effects of this treatment had subsided the symptoms returned, and as the animal had passed no feces, eserine and pilocarpine were administered. Although the effects of these last drugs soon became evident, salivation and perspiration, there were no indications of defecation. But after a short while, following a short period of comparative quietness, a very violent contraction of the abdomen took place, the mare laid down and died.

At post-mortem there was found a piece of intestine in the thoracic cavity, measuring about one and one-half meter and having entered by a small chronic ring large enough to permit one finger to pass through and was situated in the phrenic portion of the diaphragm. In gathering the history of the case the author had failed in obtaining the information that the animal had assumed the dog's sitting position, and on that account had not suspected the possibility of the condition found at the autopsy.—(*Il. Nuovo Ercol.*)

BELGIAN REVIEW.

By PROF. A. LIAUTARD, M.D., V.M.

INTESTINAL SCLEROSTOMIASIS OF HORSES [*Prof. Lineaux*].—Several varieties of parasitic enteritis are met with in horses. The most frequent and the mildest is that due to ascarides. An-

other form more rare is due to *Taenias*. The third, less known is caused by common nematods, of the *sclerostoma* kind: specie *Bidentatum* and *Edentatum*.

Sclerostoma live in the large intestines, cæcum and large colon, attached to the mucous membrane. Their eggs are thrown off by feces and hatched on the damp ground. The larvae remain therefor a long time, are picked up by horses with the grass they eat and they migrate toward the mesenteric arteries in which they give rise to aneurisms, the starting point of the colics known as the thrombo-embolics. When these do not occur, the presence of the parasites remains ordinarily unknown, but when they are numerous in colts, they give rise to serious and even fatal troubles. The disease, common all summer, has also been observed in the fall of the year. It exists in the best kept fields, rich in nitrogenous phosphatic manure. Two symptoms are prevailing, loss of flesh and diarrhea and toward the end of the disease are added œdematous swellings under the sternum and the abdomen. If death does not take place, there remains a chronic diarrhea, continued and intermittent. The diagnosis is easy. The worms can be detected in the feces or with the microscope their eggs. In making post mortem, the large intestines are seen bosselated, on their cut surface. The lymphatic glands are hypertrophied. The mucous membrane is thicker and has numerous small circular holes; points of implantation of the adult *sclerostomas*.

The preventive treatment consists in moving away from the contaminated fields and freely using sulfate of iron in them.

The curative consists in: against the worms arsenious acid during three days, cooked food, intestinal antiseptics, and against the general anemia, bitter tonics.—(*Annal. de Brux.*)

FRACTURE OF THE NECK OF THE FEMUR [*Profs. Lienaux and Zwanenpoete*].—This is frequent in colts, specially in those of Belgian breed. The lameness may appear in an insidious way, slight at the beginning, gradually or suddenly increasing and again appearing very severe from the start. In walking the animal takes a longer step than with the sound leg and this is considered by the writers as a sufficient pathognomonic symptom. The diseased leg moves all of one piece, with very limited flexion. At rest the croup is asymmetrical. The coxo-femoral angle is more projecting or stands higher on the side of the lameness, as can be detected with the eye or in feeling comparatively with

both hands. The muscles soon become atrophied. There is also a drooping of the muscular mass in front of the point on the diseased side. Crepitation may also be heard while the animal is walking or when sudden lateral movement of the stifle is made. In numerous of these cases if displacement is great, the union of the fracture cannot be looked for unless the animal is very young and the bones are kept pretty well in contact.—(*Annal. de Bruxel.*)

CALCAREOUS PLATES IN A PIG'S STOMACH [*Mr. Geudens*].—Post-mortem surprise found in an overfed animal. After washing the stomach it was found having its middle part much thickened by a plate of calcareous substance adhering to the mucous membrane and measuring fifteen centimeters in length and four and one-half in width. This plate was very rough on one side and covered with many small cavities. It was very hard and adhering quite intimately to the mucus.—(*Bullet. de Med. Vet. Prat. Malines.*)

TWO CASES OF FRACTURE OF THE FIRST PASTERN FOLLOWED BY RECOVERY [*Mr. Verlinde*].—The first was in a horse owned by the writer, who found him one morning very lame on the right hind leg. Careful examination revealed a fracture of the first pastern, transversal, and involving the middle of the bone and running a little obliquely from up to downwards and from inwards out. The bone seemed to be fractured in at least three pieces and the articulation of the fetlock and of the os coronet seemed not involved in the injury. After consideration of the case, Mr. Verlinde decided to undertake the treatment. A plaster dressing was applied with six plastered rollers starting from the heels of the shoe upwards to above the fetlock. No other splint was used. The animal was left loose in a box stall. He ate well, and the temperature was 38.7° C. As he seemed afraid to lay down and the other hind leg began to swell he was cast on the second and third days. After that he used to lay down himself and remain quiet. After some time he began to rest his foot on the ground but yet appeared quite sore in putting weight on it. In four weeks the bandage was taken off. Firing was applied on the callus but did not seem to do good. Firing was resorted to and the animal turned out to grass. In two months he was able to resume work without showing any lameness.

The second case occurred in a mare in her seventh month of pregnancy. She was taking walking exercise and became sud-

denly lame on the right hind leg. On account of the want of any marked manifestations, except the lameness and some pain round the coronet, sprain of that region was diagnosed and appropriate treatment prescribed. While the mare seemed to improve at first, ten days later the lameness had returned much more severe and yet the mare showed nothing abnormal, no crepitation, and only a little œdema of the first pastern. Fracture, possibly longitudinal or subperiosteal, was suspected and plaster dressing applied as in the first case. The mare did well, as after nearly one month the lameness seemed about gone, the dressing was taken off. The callus was well formed. The soreness gradually diminished and finally disappeared. During the time the mare was laid up she gave birth to a fine colt.—(*Ibidem.*)

PRIMITIVE SPASMODIC STENOSIS OF THE OESOPHAGUS IN A HORSE [*Mr. H. R. Bredo*].—A brewery horse, four years old, is reported to the author as vomiting. The animal, which is said to be vicious, has been left in the stable that morning. He ate his breakfast and has been well up to dinner time. At first glance, he presents nothing abnormal, except that his nostrils are soiled with masticated food. Oats are offered to him, he chews them but immediately after swallowing a mouthful a convulsive contraction of regurgitation takes place and vomiting-like food is rejected through the nose. The œsophagus gives the sensation of a hard cord. The temperature and pulse are normal. Drinks are offered, taken and rejected also. Oesophagism is diagnosed, which was brought about by nervous surexcitation or fear. A hypodermic injection of morphia is made. After a few hours the animal swallows without any trouble.—(*Ibidem.*)

DR. MIHRAN K. KASSABIAN, an acknowledged authority on the subject of X-rays, not only as a writer, but also as an inventor and experimenter, died at the Jefferson Hospital, Philadelphia, July 12, 1910, a victim of his experiments. Dr. Kassabian had experimented with X-rays for a great many years, and it was not until 1902 that he received any injury from them. At that time he burned his finger nails, and although under competent treatment at the time and at different periods since, he finally succumbed to the injury, which seemed to turn to a cancer-like affliction and steadily progressed despite every effort to check it. The doctor was a member of the Philadelphia County Medical Society, the Roentgen Society and the Medical Club of Philadelphia. He is survived by a widow and three brothers. The latter are jewelers in Smyrna.

SOCIETY MEETINGS.

FORTY-SEVENTH ANNUAL MEETING AMERICAN VETERINARY MEDICAL ASSOCIATION.

PALACE HOTEL, SAN FRANCISCO, CALIFORNIA, SEPTEMBER 6, 7,
8 AND 9, 1910.

OFFICERS, 1909-1910.

President—A. D. Melvin, Washington, D. C.

Vice-Presidents—E. A. A. Grange, Toronto, Can.; J. H. McNeil, Columbus, Ohio; G. H. Glover, Fort Collins, Col.; James Robertson, Chicago, Ill.; A. T. Kinsley, Kansas City, Mo.

Secretary—R. P. Lyman, Hartford, Conn.

Treasurer—G. R. White, Nashville, Tenn.

Librarian—W. L. Williams, Ithaca, N. Y.

REGULAR COMMITTEES, 1909-1910.

Executive—Joseph Hughes (chairman), Tait Butler, J. R. Mitchell, John R. Mohler, R. A. Archibald.

Intelligence and Education—David S. White (chairman), S. J. J. Harger, S. B. Nelson, W. H. Dalrymple, Pierre A. Fish.

Diseases—V. A. Moore (chairman), John R. Mohler, E. C. Schroeder, M. H. Reynolds, J. G. Rutherford.

Legislation—J. P. Turner (chairman), W. G. Hollingworth, T. Earle Budd, A. S. Cooley, D. E. Buckingham.

Finance—Otto G. Noack (chairman), G. Ed. Leech, R. C. Moore.

Publication—C. J. Marshall (chairman), R. W. Ellis, C. H. Stange, C. A. Cary, R. P. Lyman.

Necrology—Charles G. Lamb (chairman), William Dougherty, J. F. Winchester, George H. Berns, J. L. Robertson.

Resolutions—A. H. Baker (chairman), John V. Newton, C. H. Jewell, George H. Roberts, F. Torrance.

Local Committee of Arrangements—R. A. Archibald (chairman), David F. Fox, S. B. Nelson, W. E. D. Morrison, P. H. Browning, Charles Keane, George H. Glover, J. C. Norton, M. E. Knowles.

SPECIAL COMMITTEES, 1909-1910.

Association of Faculties—S. Stewart (chairman), F. A. Schoenleber, A. M. Farrington.

Association Seal—E. L. Quitman (chairman), Seymour Hadwen, Harry D. Gill.

Committee on Revision of Constitution and By-Laws—Richard P. Lyman (chairman), W. H. Dalrymple, S. B. Nelson, Winfred B. Mack, W. L. Williams.

Committee on Insular Possessions—Clarence Loveberry (chairman), N. S. Mayo, G. A. Hanvey, Jr., William Thompson, T. A. Allen.

International Commission for the Study of Methods of Control of Bovine Tuberculosis—J. G. Rutherford (chairman), Veranus A. Moore, W. C. Edwards, E. C. Schroeder, C. A. Hodgetts, W. D. Hoard, John R. Mohler, Frederick Torrance, J. W. Flavelle, M. H. Reynolds, Mazyck P. Ravenel, J. W. Tomlinson, Joseph M. Cudahy, John R. Hurty.

RESIDENT SECRETARIES, 1909-1910.

United States.

Alabama—I. S. McAdory, Auburn.

Arizona—J. C. Norton, Phoenix.

Arkansas—R. R. Dinwiddie, Fayetteville.

California—P. H. Browning, San Jose.

Colorado—Walter E. Howe, Denver.

Connecticut—G. W. Loveland, Torrington.

Delaware—H. B. McDowel, Middleton.

District of Columbia—B. T. Woodward, Washington.

Florida—T. J. Mahaffy, Jacksonville.

Georgia—W. A. Scott, Columbus.
Hawaii—V. A. Norgard, Honolulu.
Idaho—George E. Noble, Boise.
Illinois—L. A. Merillat, Chicago.
Indiana—J. W. Klotz, Noblesville.
Iowa—R. R. Hammond, Cherokee.
Kansas—Richard F. Eagle, Kansas City.
Kentucky—F. T. Eisenman, Louisville.
Louisiana—J. Arthur Goodwin, New Iberia.
Maine—A. Joly, Waterville.
Maryland—F. H. Mackie, Baltimore.
Massachusetts—B. D. Pierce, Springfield.
Michigan—H. M. Gohn, St. Johns.
Minnesota—M. F. K. Leffingwell, Austin.
Mississippi—W. R. Edwards, Vicksburg.
Missouri—Richard F. Bourne, Kansas City.
Nebraska—Charles A. McKim, Norfolk.
Nevada—J. Otis Jacobs, Reno.
New Hampshire—F. S. Allen, Nashua.
New Jersey—J. Payne Lowe, Passaic.
New Mexico—F. H. Schneider, Albuquerque.
New York—William H. Kelly, Albany.
North Carolina—Adam Fisher, Charlotte.
North Dakota—T. D. Hinebach, Tower City.
Ohio—G. W. Cliffe, Upper Sandusky.
Oklahoma—Robert A. Phillips, Oklahoma City.
Oregon—W. Dean Wright, Albany.
Pennsylvania—Thomas Castor, Philadelphia.
Philippine Islands—G. E. Nesom, Manila.
Porto Rico—T. A. Allen, San Juan.
Rhode Island—Thomas E. Robinson, Westerly.
South Carolina—Louis Friedheim, Rock Hill.
South Dakota—J. P. Foster, Huron.
Tennessee—Joseph Plaskett, Nashville.
Texas—W. A. Knight, Houston.
Utah—John Ernst, Jr., Salt Lake City.
Vermont—F. A. Rich, Burlington.
Virginia—Roy R. Clark, Hampton.
Washington—Logan B. Huff, Spokane.
West Virginia—L. N. Reefer, Wheeling.
Wisconsin—W. G. Clark, Marinette.
Wyoming—Otto L. Prien, Laramie.

Canada.

Alberta—J. C. Hargrave, Medicine Hat.
British Columbia—S. F. Tolmie, Victoria.
Manitoba—F. Torrance, Winnipeg.
New Brunswick—D. McCuaig, McAdam Junction.
Nova Scotia—W. H. Pethick, Antigonish.
Ontario—T. Thacker, Renfrew.
Quebec—M. C. Baker, Montreal.
Saskatchewan—J. F. Burnett, Regina.

Other Countries.

South Australia—J. Desmond, Adelaide.
Uruguay—D. E. Salmon, Montevideo.

DELEGATES FROM VETERINARY ORGANIZATIONS.

Alumni Association of the Veterinary Department of New York University—Dr. L. L. Glynn, Monte Vista, Colorado.

Bureau of Animal Industry Inspectors' Association—Dr. D. D. Tierney, Chicago, Illinois.

California State Veterinary Medical Association—Drs. H. A. Spencer, H. H. Hicks, Charles Keane, C. M. Haring and R. A. Archibald.

Chicago Veterinary Society—Drs. A. H. Baker, James Robertson, Joseph Hughes, C. A. White, E. L. Quitman, H. F. Palmer, Albert C. Worms and William Kaiser.

Georgia State Veterinary Association—Dr. L. J. Herring, Experiment; Dr. Peter F. Bahnsen, Americus; Dr. H. G. Carnes, Atlanta.

Keystone Veterinary Medical Association—Drs. Harry B. Cox, Frederick H. Schneider and Thomas Kelly, Philadelphia.

Maine Veterinary Medical Association—Delegates to be announced.

Michigan State Veterinary Medical Association—Dr. Theo. F. Krey, Detroit.

Minnesota State Veterinary Medical Association—Dr. W. Amos, Owatonna, and Dr. M. M. Fulton, Moorhead.

Missouri Valley Veterinary Association—Dr. W. R. O'Neil, Wayne, and Dr. Paul Juckiness, Lincoln, Neb.

New York State Veterinary Medical Society—Dr. W. G. Hollingworth, Utica; Dr. George H. Berns, Brooklyn, and Dr. J. F. DeVine, Goshen.

North Dakota Veterinary Medical Association—Dr. J. W. Dunham, Fargo; Dr. S. P. Smith, Cando, and Dr. J. F. Sylvester Langdon.

Schuylkill Valley Veterinary Medical Association—Dr. D. R. Kohler, Boyertown; Dr. E. D. Longacre, Shenandoah, and Dr. S. F. Griesemer, Bernville.

Southern Auxiliary of the Veterinary Medical Association of California—Delegates to be announced.

Texas Veterinary Medical Association—Dr. E. R. Forbes, Fort Worth, and Dr. Hugh Maxwell, Amarillo.

Wisconsin Society of Veterinary Graduates—Dr. D. B. Clark, Janesville, and Dr. T. H. Ferguson, Lake Geneva.

OFFICIAL REPRESENTATIVES OF THE UNITED STATES ARMY.

Dr. Alexander Plummer, Fourth Cavalry, Fort Riley Kan.
Dr. Andrew E. Donovan, Sixth Field Artillery.

HEADQUARTERS AND HOTEL ARRANGEMENTS.

The headquarters of the Association during convention week will be at the Palace Hotel, corner of Market and New Montgomery streets. This hotel is in the centre of the business district of the city, within a few minutes' ride or walk of all railroad and ferry depots.

The Palace Hotel offers the following rates: Rooms for one person, with bath, \$2.50 per day. For two persons in a room, with bath, \$4.00 per day. European plan.

The Hotel St. Francis, corner Geary and Powell streets, situated near the headquarters, offers rooms for one person, without bath, \$2.00 per day; with bath, \$2.50 per day. For two persons, without bath, \$3.50 per day; with bath, \$4.00 per day. Rooms with bath, two beds, \$6.00 per day. European plan.

Hotel Stewart, Geary street, near Powell street, within a short walk from headquarters, offers rooms for one person, without bath, \$1.50 per day; with bath, \$2.00 per day. Rooms for two persons, without bath, \$3.00 per day; with bath, \$3.50 per day. European plan.

Grand Central Hotel, corner of Market and Tenth streets, offers rooms for one person, without bath, \$1.00 per day; with bath, \$1.50 per day. Two persons, without bath, \$1.50 per day; with bath, \$2.00 per day. Two connecting rooms with bath for two or three persons, \$2.50 per day. This hotel is but a short distance from headquarters and on the European plan.

Hotel Argonaut, Fourth street, near Market street, offers rooms with detached bath at \$1.00 per day. Rooms with private bath, \$1.50 and up per day. European plan.

Cadillac Hotel, corner Eddy and Leavenworth streets, offers the following rates: Single rooms, without bath, \$2.50 per day; a bath attached, \$3.00 per day. American plan. Rooms without bath, \$1.00 per day; with bath, \$1.50 per day. European plan.

There are many other hotels located within a block or two of the headquarters. Reservations should be made early by those who contemplate attending the meeting, as other conventions are to be held in San Francisco during the same week, and the city will undoubtedly be crowded with visitors. Those wishing to reserve rooms may communicate with R. A. Archibald, Chairman of the Local Committee on Arrangements, 1724 Webster street, Oakland, California. When writing state the kind of reservation desired, or, indeed, ask for any other information pertaining to accommodations or hotel arrangements.

Restaurants—San Francisco has a world wide reputation for the number and excellence of its restaurants. Many of these with fine service and cuisine, are located within four or five blocks of the headquarters.

PLACE OF MEETINGS.

The meetings will be held daily beginning at 10.00 A. M., Tuesday, September 6th, in the ball room of the Palace Hotel. This hall is located on the ground floor of the Jessie street side of the hotel.

PRELIMINARY MEETINGS.

Monday, September 5, 1910.

10.00 A. M. Executive Committee. In room 2015 at Palace Hotel, especially provided for the conferences and located upon the second floor.

11 A. M. Local Committee on Arrangements will have room 2017 on the second floor.

2.00 P. M. Association of College Faculties will meet in a reception room on the ground floor on the Jessie street side, Palace Hotel.

2.00 P. M. Association of Examining Boards will meet in a reception room on the ground floor, Jessie street side.

4.00 P. M. Joint meeting of the College Faculties and Examining Boards, Palace Hotel.

8.00 P. M. Meetings of regular and special committees, Palace Hotel.

CONVENTION PROGRAM.

First Day, Tuesday, September 6, 1910.

8.00 A. M. Meeting of the Executive Committee, conference room, second floor, Palace Hotel.

10.00 A. M. Convention opened by President A. D. Melvin.
Address of Welcome, Hon. J. H. McCarthy,
Mayor, San Francisco, Cal.

Response to Address of Welcome, Dr. J. G. Ruth-
erford, Veterinary Director General, Ottawa,
Canada.

President's Address.

Welcome to delegates from other veterinary or-
ganizations, Dr. David F. Fox, Sacramento,
California.

Roll Call.

Submission of the minutes of the previous meeting
as presented in the annual report and records
as kept by the secretary.

Unfinished business.

12.00 M. Adjournment for luncheon.

2.00 P. M. Association reassembles.
Report of the Executive Committee.
Admission of new members.

Report of Committee on Intelligence and Education, embodying:

- (a) "Matters Concerning State Examining Boards and Existing State Laws Governing the Practice of Veterinary Medicine," Dr. David S. White, chairman, Columbus, O.
- (b) "Recent Veterinary Literature, Especially that Available to English-Speaking Veterinarians," Dr. P. A. Fish, Ithaca, N. Y.
- (c) "Recent Advances Made in the Use of Therapeutic Sera and Immunizing Agents in Veterinary Medical Practice," Dr. W. H. Dalrymple, Baton Rouge, La.
- (d) "Recent Advances Made in Surgical Procedure in Veterinary Practice," Dr. S. J. J. Harger, Philadelphia, Pa.
- (e) "The Number of Semesters Which Should Constitute a College Course in Veterinary Medicine," Dr. S. B. Nelson, Spokane, Wash.

PAPERS AND DISCUSSIONS.

1. "Veterinary Jurisprudence," Dr. Otto G. Noack, Reading, Pa.

2. "Uniformity in Degrees and Matriculation Requirements for Veterinary Colleges," Dr. George H. Glover, Fort Collins, Colo.

4.00 P. M. Election of Officers.

5.00 P. M. Adjournment.

8.00 P. M. Reception in the ball room, Palace Hotel; all members, visitors, delegates, their ladies and friends are invited.

Second Day, Wednesday, September 7, 1910.

8.00 A. M. Executive Committee meeting.

10.00 A. M. Association reassembles.

Report of Executive Committee.

Tuberculosis Session, including:

- (a) Report of Committee on Diseases, The Methods Employed in Europe to Control Bovine Tuberculosis, Dr. V. A. Moore, Chairman, Ithaca, N. Y.
- (b) The Open Air Experiment with Tuberculous Cattle, Dr. J. G. Rutherford, Ottawa, Canada.
- (c) Immunization of Cattle Against Tuberculosis, Drs. J. R. Mohler and E. C. Schroeder, Washington, D. C.
- (d) Legislation on Bovine Tuberculosis, Dr. M. H. Reynolds, St. Paul, Minn.

PAPERS AND DISCUSSIONS.

3. "Artificial Immunization of Cattle Against Tuberculosis," Dr. S. H. Gilliland, Marietta and Dr. E. S. Deubler, Media, Pa.

4. "Bovine Tuberculosis Investigations at the University of California Farm," Dr. C. M. Haring, Berkeley, California.

Report of Committee on Legislation.

Report of Committee on Finance.

Report of Committee on Publication.

Report of Committee on Local Arrangements.

Report of Committee on Necrology.

Report of Committee on Resolutions.

12.00 M. Adjournment for luncheon.

1.30 P. M. Association re-assembles.

Report of Special Committees:

Committee on Association Seal.

Committee on Revision of the Constitution and By-Laws.

Committee on Association of College Faculties.

Committee on Insular Possessions.

Report of Secretary Lyman.

Report of Treasurer White.

Discussion of Reports.

Recess.

2.00 P. M. Convention, divided into two sections, reconvenes to carry out the following program:

SECTION I.—MEDICAL DIVISION.

Papers and Discussions.

5. "The Application of Medicinal Agents to Disease," Dr. F. F. Brown, Kansas City, Mo.
6. "Nuclein," Dr. Herbert F. Palmer, Chicago, Ill.
7. "John's Disease," Dr. D. B. Clark, Madison, Wis.
8. "Bursattee," Dr. L. Roadhouse, Berkeley, California.
9. "Acute Indigestion in the Horse," Dr. John R. Mitchell, Evansville, Ind.
10. "Dourine," Dr. J. P. Foster, Huron, S. D.
11. "A Nation's Loss a Profession's Tribute to Fallen Leaders," Dr. W. Horace Hoskins, Philadelphia, Pa.

SECTION II.—PATHOLOGICAL DIVISION.

Papers and Discussions.

12. "Parasitological Investigation and Instruction in Semi-tropical Regions," Prof. W. B. Herms, University of California.
13. "Anthrax in Swine," Mazyck P. Ravenel, M.D., Madison, Wis.
14. "The Diagnosis of Glanders by Konew's Precipitation Reaction," Dr. John R. Mohler, Washington, D. C.
15. "Pseudoleukemia in the Bovine," Dr. C. H. Stange and Dr. W. W. Dimock, Ames, Ia.
16. "Serum Immunization Against Swine Diseases," Dr. J. W. Connaway, Columbia, Mo.
17. "Some Conditions Which Affect Phagocytosis," Dr. B. F. Kaupp, Fort Collins, Colo.
18. "Report of an Outbreak of Hemorrhagic Septicemia in Sheep," Dr. S. H. Ward and Dr. W. L. Beebe, St. Paul, Minn.
- 5.00 P. M. Adjournment.
- 8.00 P. M. Association re-assembles. Milk and Milk Hygiene Session.

PAPERS AND DISCUSSIONS.

19. "The Practicability of Securing Wholesome Dairy Products," Dr. S. B. Nelson, Spokane, Wash.
20. "The Necessity of Proper Transportation in the Production of a Sanitary Milk Supply," C. A. Dukes, M.D., President Oakland Board of Health.
21. "The Duty of the Veterinarian to the Milk Producer," Dr. Charles Keane, Sacramento, Cal.

22. "Stereopticon Views of Dairy Conditions in California,"
W. F. Snow, M.D., Secretary State Board of Health.

10.00 P. M. Adjournment.

Third Day, Thursday, September 8, 1910.

8.00 A. M. Executive Committee meeting.

10.00 A. M. Association reassembles. Surgical Session.
Unfinished business.

PAPERS AND DISCUSSIONS.

23. "An Address on the Present Status of Animal Surgery in America," Dr. L. A. Merillat, Chicago, Ill.

24. "The Surgical Restraint of Animals," D. G. R. White, Nashville, Tenn.

25. "Anæsthetics," Dr. R. T. Whittlesey, Los Angeles, Cal.

26. "Hypodermic Anæsthesia in Domestic Animals," Dr. E. L. Quitman, Chicago, Ill.

27. "The Evolution of Antisepsis from a Surgical Standpoint," Dr. Otis A. Longley, Fresno, California.

28. "An Address on Veterinary Dentistry," Dr. James Robertson, Chicago, Ill.

29. "Lameness of Horses," Dr. Joseph Hughes, Chicago, Ill.

30. "Modern Obstetrics in Animals," Dr. J. H. Blattenberg, Lima, Ohio.

31. "Surgical Variations in California," Dr. F. H. McNair, Berkeley, Cal.

32. "Stringhalt, Its Causes and Cure," Dr. C. C. Lyford, Minneapolis, Minn.

12.00 M. Adjournment for luncheon.

2.00 P. M. Association reassembles.
Unfinished business.
Report from the Executive Committee.
Papers and Discussions.
Installation of newly elected officers.
Adjournment.

Fourth Day, Friday, September 9, 1910.

Annual Clinic Day.

9.00 A. M. Clinic will take place at Dr. William F. Egan's branch hospital, 3250 Webster street, corner of Chestnut street.

To reach the clinic building, take the Sutter street cars, going west, transfer to the Fillmore cars going north, get off at Lombard street and walk one block to the east.

- 1.00 P. M. An open air luncheon will be served in a park adjacent to the building in which the clinic will take place.
- 2.00 P. M. Clinic continued. The clinic will be under the direction of Dr. George R. White, Nashville, Tenn., and will embrace a number of practical and interesting operations, performed by men of national repute; likewise, there will be an array of subjects for diagnosis. Effort will be put forth to secure cases of every-day character for a majority of the operative and clinical subjects.

SOCIAL FEATURES.

The Local Committee of Arrangements have arranged an entertainment for the social enjoyment of visitors and friends as well as for recreation to members. The committee will maintain an information bureau at the headquarters, where members and visitors may obtain information regarding the location of hotels, restaurants, clinic, places of amusement, etc.

The following has been outlined to occupy the days of convention week:

Tuesday, September 6.—10.00 A. M., opening exercises of the convention, ball room of the Palace Hotel, Jessie street side; visitors and friends are cordially invited. 1.30 P. M., ladies and friends of delegates and members will be given an automobile trip through the resident and business portion of San Francisco, going among other places through Golden Gate Park, along Ocean Boulevard, to the Cliff House and Seal Rocks, Sutro Gardens and Presidio. 8.00 P. M., a reception will be tendered in the ball room of the Palace Hotel; all members, visiting veterinarians, delegates, their ladies and friends are cordially invited.

Wednesday, September 7.—9.30 A. M., assembling at the Palace Hotel; the ladies will be escorted on a trip to Mount Tamalpais and Big Tree National Park; luncheon will be served on the mountain or in the park. 8.00 P. M., a trip through Chinatown.

Thursday, September 8.—9.40 A. M., Transbay trip, taking in San Francisco Bay, Yerba Buena, United States Naval Training

Station, Oakland, Berkeley, University of California, Greek Theatre, Piedmont Gardens, Piedmont Springs, Great Art Gallery, Ostrich Farm and other attractions; luncheon will be served at Piedmont Springs; 7.00 P. M., annual banquet in the "Gold Room," Palace Hotel. All are cordially invited.

Friday, September 9.—10.00 A. M., the ladies will assemble in the parlors of the Palace Hotel and from there will be escorted to a suitable location to witness the parade of the "Native Sons and Daughters of the Golden West"; 1.00 P. M., an open air luncheon will be served on a park overlooking the Golden Gate and adjacent to the building in which the annual clinic will be conducted. All are invited.

TRANSPORTATION NOTES.

Veterinary Special.—Parties planning to attend the meeting and starting from points readily accessible to Chicago are advised that special cars (as fine a special train as can be put in service if 100 passengers are secured out of Chicago) have been arranged to run on the following schedule: Leave Chicago, Burlington route, Tuesday, August 30, 6.15 P. M. (later if a special train). Arrive at St. Paul, Wednesday, August 31st, 7.05 A. M.; leave 9.00 A. M. Arrive at Spokane, via Northern Pacific, Friday, September 2, 7.30 A. M.; leave Spokane 4.15 P. M. Arrive at Seattle Saturday, September 3d, 8.20 A. M.; leave 4.00 P. M. Arrive at Portland Saturday, September 3d, 10.30 P. M.; leave Sunday, September 4th, 1.00 A. M. Arrive at San Francisco, Monday, September 5th, 11.59 A. M. The features of this beautiful and pleasurable trip have previously been detailed in the various veterinary publications. The profession of the Northern Pacific Coast have prepared a series of enjoyable side trips and entertainments, and the route itself probably embraces the greatest variety of scenery of any of the transcontinental trip.

Rates.—From Chicago, via. Portland (the route of the special) and return over any other direct route, tickets good until October 31st, with stop-over privileges, \$77.50; Pullman going \$17.50, return \$14.00. From Chicago going and return via any direct route, \$62.50 (not via the special or by Pullman); Pullman, \$14.00 each way.

The Trunk Line Passenger Association offers especially attractive rates, available from New England to Washington. Sale of tickets begins August 29th. Examples: From New York to Chicago, joining the special and returning from California to the

starting point over any other direct route, \$108.00 to \$112.50; Boston, \$107.75 to \$114.50; Philadelphia, \$108.00 to \$110.25; Buffalo, \$93.25 to \$95.50; Pittsburg, \$91.00 to \$93.25; Cincinnati, \$84.40; Cleveland, \$87.65 to \$87.75; Washington, \$108.00. The slight variation according to route between starting point and Chicago. Parties planning to join the special at Chicago or en route (having gone ahead to visit Yellowstone Park) will do well to inform Secretary Lyman, P. O. Box 901, Hartford, Conn.

From starting points west or southwest of Chicago attractive reduced rates as follows: Sioux City, \$53.90 to \$68.00; Omaha, \$50.00 to \$65.00; Kansas City, \$50.00 to \$71.75; St. Paul, \$63.00 to \$65.00; Duluth, \$65.00 to \$69.50; Superior, \$65.00 to \$69.30; Port Arthur, Ontario, \$60.00; Victoria, B. C., \$35.00; Peoria, \$59.25 to \$74.25; St. Louis, \$57.50 to \$72.50; Memphis, Tenn., and New Orleans, La., \$57.50 to \$77.50; Fort Worth, Dallas, Houston or San Antonio, Tex., \$50.00 to \$70.00; Cheyenne, Wyo., Denver, Colorado Springs and Pueblo, Cold., \$45.00 to \$60.00; Albuquerque, N. M., \$40.00 to \$62.50; Ogden, Utah, \$30.00 to \$40.00; Salt Lake City, \$31.50 to \$40.00. The higher figure includes one way via Portland, Oregon.

Exchanges.—The sale of tickets is so regulated, whatever the route, as to require presentation of exchange orders at Chicago, St. Louis or other exchange points not later than the day following the last date of special sale, viz.: For the occasion of the A. V. M. A. meeting the dates of sale are from August 29th to September 6th inclusive.

Side Trips.—Stop-overs will be allowed on whatever going or return route is selected if it does not exceed the final return limit, October 31st. This facilitates making side trips with but slight additional cost, and gives opportunity to visit the Grand Canyon, Phoenix, Colorado Springs, Cripple Creek, Yellowstone National Park or some of the many other interesting points west of Chicago, St. Louis, Memphis, New Orleans or Port Arthur.

Validation.—Tickets will be good for return only when validated by the joint agent at San Francisco, and this not exceeding three days in advance of leaving San Francisco.

Note.—When purchasing your ticket mention that it is for the occasion of the special sale, August 29th to September 6th, and inquire of the local agent concerning place of exchange if you are not routed via Chicago or St. Louis. Do this and you will save money.

RICHARD P. LYMAN, Secretary.

THE SIXTEENTH ANNUAL MEETING OF THE MISSOURI VALLEY VETERINARY ASSOCIATION.

Another successful meeting of the Missouri Valley Veterinary Association has come and gone; 112 veterinarians in attendance registered at the door and 101 names were added to the membership roll, from Colorado, Missouri, Nebraska, Kansas, Iowa, Illinois, Texas, California, South Dakota, Wyoming, Oklahoma, New Mexico, Indiana, Montana, Kentucky and Minnesota.

The meeting was called to order in the assembly room, City Hall, Omaha, Neb., at 9 a. m., July 6th, by the president, Dr. A. T. Kinsley.

The roll call was dispensed with and registration taken at the door.

The minutes of the previous meeting were approved as printed in the Missouri Valley Bulletin.

Under the head of correspondence the secretary read the petition for resignation of Drs. Robert Dill and C. O. Netherton. The resignations were accepted. A letter was also read from Dr. A. D. Melvin, chief of the Bureau of Animal Industry, in which he stated many substantial reasons why that bureau or any part of same should not be made a subsidiary part of the proposed Department of Health. He also stated that it was gratifying to see the aid veterinarians all over the United States were giving in an effort to preserve the efficiency of the bureau and prevent any bill from passing that would take the Bureau of Animal Industry from the Department of Agriculture.

The subject of the proposed revision of the constitution and by-laws, as presented at the semi-annual meeting, was taken up for action. Article IX. was accepted as presented, which reads as follows:

FEES OF OFFICERS.

ART. IX.—All offices in this association except that of Secretary-Treasurer, under the constitution and by-laws thereof, are hereby declared to be offices of trust and honor to which no fee or emolument is attached, but other offices of emolument may be created.

Article X. was revised and adopted as follows:

ART. X.—The Secretary-Treasurer shall receive fifty dollars (\$50) per annum and actual expenses in attending the meetings of the association.

Dr. S. Stewart moved that the board of censors and the officers of the association shall constitute an executive committee and all new business that shall come before the association shall go through this committee. Seconded by Dr. H. C. Simpson and carried. This committee will meet on the evening before the association convenes and will request that any matters to come before the association shall be in the hands of the secretary of the association before that time.

The subject of the feasibility of issuing a certificate of membership to all whose dues are paid up in advance, was brought up and discussed. It was moved, seconded and carried that a committee of three be appointed to draft an article providing for a certificate of membership.

The Secretary-Treasurer's report showed \$109.53 in the treasury. This did not include the receipts of this meeting and included the payment of all expenses, except that of janitor, for the present meeting. Moved, seconded and carried that the report be accepted.

Dr. D. M. Campbell announced his retirement as editor of the Missouri Valley Veterinary Bulletin, and also of his intention of publishing a veterinary journal under the name of the American Journal of Veterinary Medicine. He offered to make this publication the official organ of the association, but this offer was declined by the members of the association present. No step was taken at this meeting for the continuance of the Missouri Valley Veterinary Bulletin.

Dr. C. E. Stewart moved that a vote of thanks be extended to the local committee for their excellent arrangements and entertainment. Seconded and carried.

The President's annual address by Dr. A. T. Kinsley was given in the forenoon of the first day following the business session.

The chairman of the committee on therapeutics, Dr. H. Jenson, gave his paper on "Reports of Newer Therapeutic Agents." This brought out quite a discussion by the members present.

The committee on surgery, of which Dr. J. S. Anderson is chairman, did not make a report. The meeting adjourned to luncheon at 12.30 and assembled at 1.30 p. m. to observe and study a pathological exhibit at Armour's packing plant, South Omaha, Neb. This consisted of fresh pathological specimens from cattle, calves, hogs and sheep, collected by the veterinary

inspector of the local Bureau of Animal Industry under the direction of the inspector in charge.

The pathological specimens were numbered. Cards were furnished each member on which could be written the description and diagnosis. Sixty-four exhibits were presented.

The annual banquet was held at the Paxton at 7.30. Sixty were present. Papers were presented and discussed (instead of the usual toasts). The first paper presented was a report of the committee on infectious diseases by the chairman of the committee, Dr. Geo. H. Glover. This report was followed by a long discussion, participated in by Drs. S. Stewart, A. T. Peters, H. C. Simpson, P. Juckiness and others.

The report of the committee on meat and milk inspection was made by the chairman of the committee, Dr. D. M. Campbell. The discussion was participated in by Drs. Frank Jellen, W. N. Neil, C. P. Liegerot, and others.

"Infectious Diseases as Encountered in the Philippines," was discussed by Dr. Geo. A. Hanvey, Jr., Sixth U. S. Cavalry.

"Tuberculosis and the Tuberculin Test" was discussed by Dr. P. Juckiness; "Contagious Abortion" was discussed by Dr. A. T. Peters.

"Hog Cholera" was discussed by Dr. H. C. Simpson; the doctor reported that Iowa had appropriated \$8,000 for the manufacture of hog cholera serum and furnished it free to the stock raisers, but it must be administered by a competent veterinarian. He condemned the practice of Oklahoma in giving it out to the farmer to be used by the farmer, who was totally unqualified to administer this kind of vaccine.

The forenoon of July the 7th was devoted to the presentation of papers and discussion of same. The first paper on the program was one on "Castration of Cryptorchids," by Dr. A. W. Whitehouse, of Waldon, Col. "The Life History of Koch" was nicely related by Dr. S. Stewart of Kansas City, Mo. "Open Joints and their Treatment in My Practice" was read by Dr. J. V. LaCroix, and brought out a lengthy discussion.

The papers presented at the afternoon meeting were as follows: "Alfalfa Impaction in the Horse," by Dr. J. W. McGinnis; "Impaction of the Colon," by Dr. I. E. Newson. These two papers were discussed to considerable extent. In the discussion was brought out the fact that some practitioners prefer to induce the ingestion of large quantities of water. This is sometimes done by giving three or four ounces of sodium chloride in capsules.

Others after passing the stomach tube inject into the stomach three to six gallons of warm water. The increased quantity of fluid in the digestive tract favors the softening of the obstructing mass and purgation. Dr. J. P. Jorgenson administers glycerine to aid this process. Dr. S. Wisner presented a case report.

It was moved, seconded and carried that the semi-annual meeting to be held in Kansas City in February be a three day session.

It was moved, seconded and carried that the committees on surgery, infectious diseases, meat and milk inspection and necrology be continued another year.

The committee on Necrology made the following report, which was accepted:

Whereas, Dr. L. R. Baker was an active member of this association and has contributed in numerous ways to the progress, and,

Whereas, He had been ever solicitous to make our meetings both valuable and pleasurable, and

Whereas, We have been deprived of his genial fellowship and professional co-operation by his untimely death on July 3, 1910, be it

Resolved, That we record our high appreciation of his splendid manhood and his ever helpful and courteous relations with his professional brethren, and be it further

Resolved, That we express our deep sympathy to his bereaved family.

Dr. Jellen then moved the adoption of the following resolution:

Resolved, by the Missouri Valley Veterinary Association, in annual convention assembled, that we heartily agree in the furtherance of the purposes for which the international commission on tuberculosis was formed, and watch with interest the progress made by this commission, and be it further

Resolved, That we will individually and collectively render every assistance possible to the international commission for the study of tuberculosis, and be it further

Resolved, That we believe that this association, representing as it does nearly 600 veterinarians, should have a representative on the commission.

The motion was seconded and carried.

The committee on drafting an amendment to the constitution authorizing the issuance to active members in good standing made the following report:

Chapter II. Art. VIII.—The Secretary-Treasurer shall have prepared and deliver to each member who is in good standing and has paid the cost of issue, a certificate of membership which shall read as follows: (form to be suggested by the committee and adopted by the association).

S. STEWART,
D. M. CAMPBELL,
H. C. SIMPSON,
A. T. PETERS,
C. E. STEWART.

The following officers were elected for the following year:

Dr. B. F. Kaupp, President.
Dr. C. A. McKim, First Vice-President.
Dr. C. E. Stewart, Second Vice-President.
Dr. Hal C. Simpson, Secretary-Treasurer.
Dr. R. Ebbitt, Dr. S. H. Johnson, Dr. H. Jensen, Dr. J. V. LaCroix, Dr. H. E. Kingman, Board of Censors.

The president appointed the following delegates to the American Veterinary Medical Association to be held in San Francisco, September 6, 7, 8 and 9, 1910: Dr. W. R. O'Neil, Wayne, Neb.; Dr. P. Juckiness, Lincoln, Neb.

The following committees were appointed by the president-elect for the ensuing year:

Infectious Diseases—Dr. Geo. H. Glover, chairman, Ft. Collins, Colo.; Dr. D. F. Luckey, Columbia, Mo.; Dr. P. Juckiness, Lincoln, Neb.; Dr. H. E. Bemis, Ames, Ia.; Dr. L. L. Lewis, Stillwater, Okla.; Dr. O. O. Wolf, Ottawa, Kans.; Dr. A. T. Peters, Springfield, Ill.

Therapeutics—Dr. H. Jensen, chairman, Kansas City, Mo.; Dr. J. A. DeCow, Holdredge, Neb.; Dr. H. E. Kingman, Ft. Collins, Colo.; Dr. K. W. Stowder, Manhattan, Kans.; Dr. G. P. Statter, Sioux City, Ia.; Dr. Geo. Jungerman, Morrill, Kans.

Surgery—Dr. J. V. LaCroix, chairman, Hiawatha, Kans.; Dr. R. R. Dykstra, Ames, Ia.; Dr. P. Simonson, Lexington, Neb.; Dr. S. I. Folse, Houston, Tex.; Dr. F. F. Brown, Kansas City, Mo.; Dr. G. W. Stickey, Colorado Springs, Colo.

Food and Milk Inspection—Dr. D. M. Campbell, Chicago, Ill.; Dr. G. F. Babb, Topeka, Kans., Dairy; Dr. Frank Jellen, Omaha, Neb., Meat; Dr. C. M. McFarland, St. Joseph, Mo., Meat; Dr. C. D. Folse, Marshall, Tex., Food; Dr. C. P. Liegerot, Red Oak, Ia., Dairy.

Necrology—Dr. S. Stewart, chairman, Kansas City, Mo.; Dr. V. Schaefer, Tekamah, Neb.; Dr. E. Biart, Leavenworth, Kans.

Certificate of Membership—Dr. A. T. Kinsley, chairman, Kansas City, Mo.; Dr. C. E. Stewart, Charlton, Ia.; Dr. W. N. Neil, Omaha, Neb.

B. F. KAUPP, Secretary.

RESUME OF THE PROCEEDINGS OF THE KEYSTONE VETERINARY MEDICAL ASSOCIATION, PHILADELPHIA, PA.

The Keystone Veterinary Medical Association has had a year of peculiarly interesting meetings and a regular and appreciative attendance on the part of its members. The membership has been increased by the admission of eleven new members. The subjects presented before the Association are as follows:

Oct. 12, 1909.—“The Mentality of the Horse,” Dr. B. M. Underhill.

Nov. 9, 1909.—1. “Immunization against Canine Distemper,” Dr. D. E. Buckingham. 2. “A Crusade against Tuberculosis and Its Result,” Drs. C. B. Lane and L. A. P. Maynard. 3. “Leucocytes in Milk,” Dr. H. C. Campbell.

Dec. 14, 1909.—1. “The Standardization of Serums,” Dr. A. Parke Hitchens. 2. “Spavin in the Horse,” Dr. J. W. Adams.

Jan. 11, 1910.—1. “Malarial Parasites,” Dr. Wm. Pepper. 2. “The Coccidium and the Coccidiosis,” Dr. Geo. Byron Morse.

Feb. 8, 1910.—1. “The Significance of Chill,” Dr. Allen J. Smith. 2. “White Scours in Calves,” Dr. Henry Marshall.

April 12, 1910.—1. “The Veterinarian as a Conservator of the Interests of the Stockbreeder and Dairyman,” Dr. Carl W. Gay. 2. “Tuberculosis Bacilli in Philadelphia’s Milk Supply,” Dr. H. C. Campbell.

May 10, 1910.—1. * “Preventive Dose of Tetanus Antitoxin

* Published in this issue of the REVIEW.

for the Horse: Its Relation to the American Unit," Dr. A. Parker Hitchens. 2. "Alkaloidal Anæsthesia," Dr. S. J. J. Harger. 3. "Contagious Abortion in Cattle," Dr. E. Mayhew Michener.

June 14, 1910.—1. "The Effect of Smelter Fumes Upon the Livestock Industry in the Northwest," Dr. Robert J. Formad. 2. "Hog Cholera," Dr. E. S. Deubler.

The monthly meeting in March, as on previous occasions, gave place to the annual meeting of the Pennsylvania State Veterinary Medical Association.

On January 18 the Association gave a banquet at the School of Veterinary Medicine in honor of Dr. S. H. Gilliland, then recently appointed State Veterinarian for Pennsylvania, and Dr. Louis A. Klein, who only a few days prior was chosen dean of the School of Veterinary Medicine by the Trustees of the University of Pennsylvania.

At present the Association is studying the best means to adopt to perpetuate the memory of Drs. Rush Shippen Huidekoper and Leonard Pearson, both deceased members of the Association.

It is also making a study of some of the features of the milk supply of Philadelphia and endeavoring to secure the production and administration of anti-rabic vaccine in the city.

S. LOCKETT, Secretary.

ANNUAL MEETING UNITED STATES LIVE STOCK SANITARY ASSOCIATION, CHICAGO, 1910.

The Executive Committee of this Association voted to hold the Fourteenth Annual Meeting in Chicago, December 5, 6, 7, 1910.

These dates follow the International Live Stock Exposition, which it was thought many of our members would attend.

The International Commission on Bovine Tuberculosis will report to the American Veterinary Medical Association at San Francisco, second week of September. Members of this association will have ample time to consider the Report of the Commission before the Chicago meeting.

Federal and state officials, and all persons interested in live stock sanitary work are earnestly requested to identify themselves with this association by forwarding application for membership to the undersigned.

J. J. FERGUSON, Secretary-Treasurer, Chicago.

NEWS AND ITEMS.

DR. CHAS. H. HIGGINS, Ottawa, Canada, Biologist of Health of Animals Branch of the Department of Agriculture, Dominion of Canada, was recently honored by being elected a Fellow of the Royal Microscopical Society of England. This recognition by so conservative a body is something to be proud of, and we congratulate Dr. Higgins as the recipient of this honor which he so well deserves.

MR. HENRY PHIPPS, of New York, has selected the University of Pennsylvania to carry on the work of the Phipps Institute, whose object is the study, prevention and treatment of tuberculosis. Mr. Phipps has already acquired ground in Philadelphia on which will be erected a hospital for this purpose. The extent of the benefaction exceeds \$5,000,000.

The report of the Committee appointed to consider the future policy of the Institute has been approved by Mr. Phipps and the trustees of the University.

The work will be divided into three general departments, each of which will be presided over by a director. For the Directorship of the Laboratory, Dr. Paul Lewis, now of the Rockefeller Institute, has been selected. For Directorship of the Sociological Department, Mr. Alexander M. Wilson, of the Boston Association for the Relief and Control of Tuberculosis. Dr. H. R. M. Landis has accepted the appointment as Director of the Clinical Department.

In addition to a board of eight directors who will be directly responsible to the trustees of the University, an Advisory Council has been created and will meet annually at the Institute. The following have accepted the invitation to serve as members of this body: Dr. Samuel G. Dixon, Harrisburg, Pa.; Dr. S. McC. Lindsay, New York City; Dr. William H. Baldwin, Washington, D. C.; Dr. Hermann M. Biggs, New York City; Dr. William H. Welch, Baltimore, Md.; Dr. Theobald Smith, Boston, Mass.; Dr. Gideon Wells, Chicago, Ill.; Dr. Simon Flexner, New York City; Dr. James A. Miller, New York City; Dr. Lawrence Brown, Saranac, N. Y.; Dr. Henry Baird Favell, Chicago, Ill., and Dr. James Pratt, Boston, Mass.

THE VETERINARY RECORD.—We have recently had the pleasure of perusing a copy of *The Veterinary Record*, a class record published by the senior class of the Veterinary Department of the University of Pennsylvania and dedicated to Dr. Simon J. J. Harger of the faculty, in recognition of his many kindnesses and appreciation of his personal sacrifices for their benefit. On the back of the dedication page appears a splendid picture of Dr. Harger, and opposite a concise biography from the pen of Dr. W. Horace Hoskins, who tells in brief the life of this excellent teacher of veterinary medicine and students' friend, Dr. Simon J. J. Harger.

Following that is a bird's eye view of the University of Pennsylvania, a photo of Provost Harrison and of Vice-Provost Smith. After reading the introduction, we turn the page and find on its back a picture of a group of distinguished looking, earnest young men. It is that of the Record Board, which a scroll on the opposite page tells us consists of H. Preston Hoskins, Editor-in-Chief; E. L. Loblein, Jr., Asst. Editor; John N. Rosenberger, Poet; Vincent C. Moyer, Prophet; Thomas J. Quinn, Historian; Benjamin Gunner, Artist; M. L. Connelly, Advertising Manager, and William H. Ivens, Business Manager. Following is the history of the University of Pennsylvania Veterinary Department, photos and biographies of Dean Louis A. Klein and each member of the faculty, of each member of the class of 1910, the latter being written in a humorous vein. After this the class history and class poem. When, turning over the page, we are met by an excellent photo of Dr. Leonard Pearson, as "Organizer and Founder of the Veterinary Medical Society of the University of Pennsylvania," followed by a history of said society, poetry on the faculty and other things, making a volume of about 140 pages, neatly bound, and covered with soft leather with a dull finish that is an ornament to a library table. The book is invaluable to every member of the class and interesting to any one.

IN renewing his subscription to the REVIEW, Dr. Ralph W. Balkan, of Springfield, Mass., says: "I enjoy the REVIEW very much and don't know how any busy practitioner can get along without it. It is one of the greatest aids to the advancement of the veterinary profession that I know of. I have heard many others speak of it the same way."

VETERINARY MEDICAL ASSOCIATION MEETINGS.

In the accompanying table the data given is reported by many Secretaries as being of great value to their Associations, and it is to be regretted that some neglect to inform us of the dates and places of their meetings.

Secretaries are earnestly requested to see that their organizations are properly included in the following list :

Name of Organization.	Date of Next Meeting.	Place of Meeting.	Name and Address Secretary
Alumni Ass'n, N. Y.-A. V. C.	.....	141 W. 54th St.	J. F. Carey, East Orange, N. J.
American V. M. Ass'n.....	Sept. 6, 7, 8, 9, 10	San Francisco.	R. P. Lyman, Kansas City, Mo.
Arkansas Veterinary Ass'n.....	.....	.....	Horace E. Rice, Little Rock.
Ass'n Médécalle Veterinaire Française "Laval".....	1st and 3d Thur. of each month	Lec. Room, Laval Univ., Mon.	J. P. A. Houde, Montreal.
B. A. I. Vet. In. A., Chicago.....	2d Fri. ea. mo....	Chicago.....	H. A. Smith, Chicago, Ill.
California State V. M. Ass'n.....	.....	San Francisco.	J. J. Hogarty, Oakland.
Central Canada V. Ass'n.....	.....	Ottawa.....	A. E. James, Ottawa.
Chicago Veterinary Society.....	2d Tues. ea. mo	Chicago.....	J. M. Parks, Chicago.
Colorado State V. M. Ass'n.....	.....	Denver.....	M. J. Woodliffe, Denver.
Connecticut V. M. Ass'n.....	.....	.....	B. K. Dow, Willimantic.
Genesee Valley V. M. Ass'n.....	.....	.....	J. H. Taylor, Henrietta.
Georgia State V. M. A.....	Dec. 21, 22, 1910.	Atlanta.....	P. F. Bahnsen, Americus.
Hamilton Co. (Ohio) V. A.....	.....	.....	Louis P. Cook, Cincinnati.
Illinois State V. M. Ass'n.....	.....	.....	J. H. Crawford, Harvard.
Illinois V. M. and Surg. A.....	Aug. 2, 3, 4, 1910	Anna.....	F. Hockman, Louisville.
Indiana Veterinary Association.....	Jan. 11, 12, 1911..	Indianapolis..	E. M. Bronson, Indianapolis
Iowa Veterinary Ass'n.....	.....	.....	H. C. Simpson, Denison.
Kansas State V. M. Ass'n.....	Jan. 10, 11, 1911.	Topeka.....	B. Rogers, Manhattan.
Kentucky V. M. Ass'n.....	.....	Not decided ..	D. A. Piatt, Lexington.
Keystone V. M. Ass'n.....	Sept. 13, 1910 ..	Philadelphia..	S. Lockett, Glenolden.
Louisiana State V. M. Ass'n.....	.....	.....	E. P. Flower, Baton Rouge.
Maine Vet. Med. Ass'n.....	.....	.....	C. L. Blakely, Augusta.
Maryland State Vet. Society.....	.....	Baltimore.....	H. H. Counselman, Sec'y.
Massachusetts Vet. Ass'n.....	Monthly.....	Boston.....	Wm. T. White, Newtonville.
Michigan State V. M. Ass'n.....	.....	.....	Judson Black, Richmond.
Minnesota State V. M. Ass'n.....	.....	.....	G. Ed. Leech, Winona.
Mississippi State V. M. Ass'n.....	.....	.....	J. C. Robert, Agricultural Col.
Missouri Valley V. Ass'n.....	Feb, 1911.....	Kansas City..	Hal. C. Simpson, Denison, Ia.
Missouri Vet. Med. Ass'n.....	.....	.....	D. L. Luckey,
Montana State V. M. A.....	.....	Helena.....	W. S. Swank, Miles City.
Nebraska V. M. Ass'n.....	.....	Grand Island.	H. Jensen, Weeping Water.
New York S. V. M. Soc'y.....	Aug. 25, 26, 27, 10	Ithaca.....	J. F. De Vine, Goshen.
North Carolina V. M. Ass'n.....	.....	.....	Adam Fisher, Charlotte.
North Dakota V. M. Ass'n.....	Jan. 1911.....	Fargo.....	C. H. Martin, Valley City.
North-Western Ohio V. M. A.....	Feb and Nov. in each year.....	Lima.....	A. J. Kline, Wauseon.
Ohio State V. M. Ass'n.....	.....	.....	O. V. Brumley, Columbus.
Ohio Soc. of Comparative Med..	Annually.....	Up'r Sandusky	F. F. Sheets, Van Wert, Ohio.
Oklahoma V. M. Ass'n.....	.....	.....	R. A. Phillips, Oklahoma City
Ontario Vet. Ass'n.....	1st week in Aug. each year.....	.....	C. H. Sweetapple, Toronto.
Passaic Co. V. M. Ass'n.....	Call of Chair...	Paterson, N. J.	H. K. Berry, Paterson, N. J.
Phillipine V. M. A.....	.....	.....	Chas. G. Thomson, Manila.
Portland Vet. Med. Ass'n.....	4th Tues. ea. mo.	Portland, Ore.	Peter Hanson, Portland, Ore.
Province of Quebec V. M. A.....	.....	Mon. and Que.	Gustave Boyer, Rigaud, P. Q.
Rhode Island V. M. Ass'n.....	Jan. and June..	Providence...	J. S. Pollard, Providence
St. Louis Soc. of Vet. Inspectors.	1st Wed. fol. the 2d Sun. ea. mo.	St. Louis.....	Wm. T. Conway, St. Louis, Mo
Schuylkill Valley V. M. A.....	.....	.....	W. G. Huyett, Wernersville.
Soc. Vet. Alumni Univ. Penn.....	.....	Philadelphia..	B. T. Woodward, Wash'n, D.C.
South Dakota V. M. A.....	.....	.....	J. A. Graham, Sioux Falls.
Southern Auxiliary of California State V. M. Ass'n.....	Jan. Apl. 1y. Oct.	Los Angeles..	A. D. Hubbell, Los Angeles.
So. St. Joseph Ass'n of Vet. Insp.	4th Tues. ea. mo.	407 Ill. Ave....	H. R. Collins, So. St. Joseph.
Tennessee Vet. Med. Ass'n.....	.....	.....	A. C. Topmiller, Murfreesboro
Texas V. M. Ass'n.....	Call Exec. Com.	St. P.-Minneap	R. P. Marsteller, College Sta.
Twin City V. M. Ass'n.....	2d Thu. ea. mo ..	.....	S. H. Ward, St. Paul, Minn.
Vermont Vet. Med. Ass'n.....	.....	.....	G. T. Stevenson, Burlington.
Veterinary Ass'n of Alberta.....	.....	.....	C. H. H. Sweetapple, For. Saskatchewan, Alta., Can.
Vet. Ass'n Dist. of Columbia.....	3d Wed. ea. mo..	514—6th St., N. W.....	M. Page Smith, Wash., D. C.
Vet. Ass'n of Manitoba.....	Not stated.....	Winnipeg.....	F. Torrance, Winnipeg.
Vet. Med. Ass'n of N. J.....	.....	.....	W. Herbert Lowe, Paterson.
V. M. Ass'n, New York City.....	1st Wed. ea. mo.	141 W. 54th St.	W. Reid Blair, N. Y. City.
Veterinary Practitioners' Club.....	Monthly.....	Jersey City.....	A. F. Mount, Jersey City.
Virginia State V. M. Ass'n.....	.....	.....	W. G. Chrisman, Charlo'sv'le.
Washington State Col. V. M. A ..	1st & 3d Fri. Eve.	Pullman.....	R. G. McAlister, Pullman.
Washington State V. M. A.....	.....	Seattle.....	J. T. Seely, Seattle.
Western Penn. V. M. Ass'n.....	1st Wed. ea. mo.	Pittsburgh.....	F. Weitzell, Allegheny.
Wisconsin Soc. Vet. Grad.....	Grand Rapids.	J. P. West, Madison.
York Co. (Pa.) V. M. A.....	Sept 6, 1910....	York.....	E. S. Bausticker, York, Pa.

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AMERICAN VETERINARY REVIEW.

SEPTEMBER, 1910.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, July 15, 1910.

UPON EXPERIMENTAL CANCER.—Communications on this subject and records of experiments by many investigators have on various occasions found their way in scientific medical and veterinary papers and many facts have already been established in relation to the grafting of cancers on various species. Numerous and important as the reports have been, positive conclusions have not been accepted in all cases and on that account the question remains open, leaving at the same time immense interest for all new facts that may be recorded, as they have been, and will again be, all over the world. At a recent medical meeting held at Geneva, a very interesting communication was presented and discussed by a physician, Dr. Odier, in which he resumed pretty well and in a general way all that has been done on that question. Indeed Dr. Odier exhibited at the meeting four mice affected with experimental cancer, a sarcoma originating from one that Prof. Ehrlich had sent him from Frankfort. The tumor developed in the first animal was 45 days old, and was in size three-quarters as big as the whole body of the little animal. In the other three mice, inoculated 19 days before, the tumor varied in size between that of a small pea to that of a large hazel nut. What facts have so far been obtained by those experiments on mice and on rats? In the cancer obtained experimentally in these animals, grafting was resorted to. Primitive experiments, which go back to 1773,

and have been renewed to our days, were begun by inoculation of human cancer to animals and particularly to mice. Old writers claim to have obtained positive inoculations, while modern experimenters deny that graftings in such conditions could be obtained. It is probable, however, that some successful inoculations may have been obtained, as Dr. Odier has a mouse which has been successfully inoculated with human carcinoma. All the animals that Dr. Odier has experimented with received concentrated solution of glycogene.

The conditions of transplantation are to-day perfectly defined. It is thus that it is known that a tumor left exposed at a temperature of 37° C. for twenty-four hours cannot be used after that length of time. On the contrary if it is exposed several minutes only, its virulency is increased. Phenol and cyanide of potassium stop its development. Temperature very close to zero conserves to the cancerous cell the faculty of reproduction. Ehrlich has obtained a positive graft with a tumor kept for a year in the ice box.

Once the cancerous cell created, it reproduces itself without limit. With one sprout of spontaneous adeno-carcinoma, Jensen has succeeded in reproducing 200,000 cancers. The notion of perennity of the cancerous cell takes us away from the facts known to this day in pathology.

Notwithstanding all the objections and criticisms which are advanced against experimental cancer, it is nevertheless certain, that it has allowed science to acquire facts of capital importance.

* * *

Among these the culminating one is the anticancerous immunity of mice and rats. It is possible to obtain this immunity in various manners. 1. By previous inoculations of crushed tumors. 2. By the injection of the red corpuscles of mice. 3. By that of liver or spleen from mice. 4. By the resorption of a tumor partially developed.

To those facts must be added the opinion sustained by Ehrlich, that pregnant mice are peculiarly refractory. Dr. Odier

differs from this opinion. For him gestation promotes the growth of a transplanted tumor in some conditions. One of the mice presented at the meeting was indeed in gestation.

Immunity acquired towards a tumor of special anatomical form has nothing specific by itself. That obtained by inoculation of crushed tumor or by resorption of a grafted tumor is a panimmunity. Sarcoma immunizes against carcinoma, adenocarcinoma, osteosarcoma and chondroma.

The most interesting point in connection with the experiments upon immunity in animals is that which relates to rats. When one is inoculated with a tumor coming from a mouse, it develops in eight or ten days, exactly as in the mouse. But from that time the rat's organism defends itself and the tumor disappears in the same length of time, say eight or ten days. From that time the rat remains absolutely refractory to any other inoculation. This phenomena is called by Ehrlich athrepsical immunity. He explains it by saying that there exists in mice a substance "X," that Odier calls cancerogene, which is absent or at least is in very small quantity in rats. This substance, X, indispensable to the growth of the cancer, is rapidly absorbed by the graft, which develops according to the quantity of substance X present, and when this is absorbed the cancer dies from want of nutrition. This is a very interesting explanation, but is it sufficient?

I hope that Prof. Petit, of Alfort, who is much interested in the question and always carrying experiments in his studies of cancers may at an early date give me the opportunity of reproducing some of the results he has obtained.

* * *

AZOTURIA—HEMOGLOBINURIA.—Veterinary and medical papers here have recently published an article on this subject containing the observations, experiments and conclusions relating to it as published by a veterinarian, Mr. A. Lucet, Adjunct to the Museum of Natural History, and recently elected Member of the Academy of Medicine.

Considering first the nomenclature and the various names by which the disease is known, that of *muscular rheumatism of the hind quarters* (Weinmann, Leuchleutner, Frohner, etc.), of *hemoglobynemia* (Bollinger, Siedamgrotzky, Hoffmeister, Ellenberger, etc.), of *azoturia* at the time when uremic theory prevailed, of *essential paraplegia*, and finally of *medullary congestion*, by Trasbot, Mr. Lucet gives the affection the name of *Paroxysmic Hemoglobinuria à Frigore*, which he claims characterizes it well.

The various modes of manifestation are then presented with all their well-known peculiarities and the symptomatology is well considered as exhibited by the muscular apparatus, pointing essentially to myositis of various degrees, and which at post mortem are characterized by the aspect granular, dull red or greyish coloration of the muscular tissue, which is at times infiltrated with small ecchymotic spots and when cut through give escape to some serosity.

To the histological point of view, the muscular alterations reveal those of a toxic or infectious myositis. They are varied. In some places it is the irregular tumefaction of Virchow, in others the glassy degeneration of Zenker, or again the granular of Meryon, viz., fine granulations colored in dark yellow and seem to be due to a pigmentary alteration of the muscular hemoglobine, or also in subjects whose death has been slow to take place, the interfascicular connective tissue shows a beginning of organization while the muscular fasciculi, surrounded with an exudate more or less abundant, presents numerous cellular elements thrown in series on their surfaces or in their thickness. These muscular lesions are for Lucet the pathognomonic ones of the disease, and after mentioning those which are found in the liver, spleen, kidneys and bladder which contains more or less of the characteristic urine, and passing a review of the conditions of the history in which the disease appears, the seasons, incubation, immunity, etc., the question is put: Is hemoglobinuria of horses of muscular or bloody, of toxic or infectious origin.

From all facts considered, for Lucet it is *essentially a disease of muscles*. If hemoglobinuria was hemoglobinemia, the serum of horses which die very quick, and that one specially, ought to be strongly colored red. Besides this, in all animals that recover from serious or repeated attacks, an appreciable reduction in the corpuscles would be observed. Nothing of this kind exists. Again such serum has no hemolysing property. But besides, it has been proved that muscular hemoglobine will pass with the greatest facility through the renal filter and produces also hemoglobinuric deposits, even when its quantity in the bloody serum cannot be appreciated.

And now that the fact of the presence of myositis is well established, the mode of development of hemoglobinuria is easily to be explained:

"From the fact of the lesions of degeneration existing, the muscles lose their contractility, hence difficulty of locomotion. They leave off their hemoglobine in quantity. This is spread in the economy, impregnates it and promotes general phenomena of intoxication, so much more accused that the flow of hemoglobine is more rapid or greater. If then the progress of the myositis and its cause cease little by little, the osmotic tension of the organic fluid first increased is diminished, the equilibrium is reestablished and all the organs of elimination and transformation acting, the patient returns to his normal state.

"If on the contrary, saturated and not filling its part any longer, the renal epithelium refuses to work, it dies, it disappears. Then the kidneys are closed, anuria takes place, and, continually poured out, the muscular poison collects in the various organs and kills the patient.

"After all, death takes place through the kidneys under the form of a general intoxication, death which will be so much more rapid that the organ will have been affected from the start."

To the point of view of comparative medicine, the description and theory advanced by Lucet suggested an important question, namely: Essentially muscular in its nature, can this paroxystic hemoglobinuria à frigore of horses be related to the

same disease in man, and can the history of the first throw any light on some points still obscure in the genesis of the human affection?

* * *

OCCULT TUBERCULOUS INFECTION IN FOWLS.—The experiments are well known, which Director Arloing has carried out, and in which he has succeeded in giving to the tuberculous bacilli of mammaliæ (man or cattle) the vegetative and pathogenic characters, which had been considered before as belonging exclusively to the aviary bacilli, and which had for results to contribute to gather together the types of bacilli admitted by several authors and assimilate the aviary bacillus to that of mammalia. But the frequent failures of the experiments made to infect fowls with the bacilli of mammalia is yet taken advantage of by some bacteriologists who are desirous to keep up marked distinction in tuberculosis and who mention (to support their theory), the experiments of Strauss and Wurtz and those of Nocard where the fowls used for these experiments had failed to reveal any trace of macroscopic or microscopic lesions.

The question certainly was important and deserved positive settlement. It belonged to Dr. Arloing to try and succeed in settling it. To that effect he made experiments which he resumed before the Société des Sciences Vétérinaires of Lyon at one of its last meetings.

He took a number of fowls which he divided into lots of two. The birds of a first series (fourteen in number) were fed with tuberculous lesions of cattle. The birds of a second series received similar feeding made of humane sputa, very rich in bacilli. All the fowls were kept in best hygienic condition and were well fed. The results were that all the birds lost flesh sooner or later, had infiltrations of the sub-cutaneous connective tissue and among those that died, four had been fed with bovine lesions and two with human. Peritonitis was found in one. Pericarditis in another, but in none were tuberculous lesions apparent in any of the viscera.

But when histological examination of sections were made of the viscera and of the parenchymas of some, it was another story. In the liver of the four fowls that took bovine tuberculous matter, more or less extensive lesions of the liver were found, consisting in infiltrations by small round cells deposited inside or on the periphery of the hepatic lobules. Similar lesions also existed in the liver of the fowls fed with human sputa, but they were less numerous and smaller. The spleen was little affected. The kidneys also. In the lungs there were few small centers of broncho-pneumonia. The hepatic lesions resembled those which follow the inoculation of aviary bacilli in the peritoneum or under the skin of fowls. They recalled absolutely the hepatic lesions of the rabbit, after the intra-venous infection of human or bovine bacilli modified by culture in deep bouillon. Arloing considers them as tuberculous. They were found in most of the fowls experimented with.

Consequently, concludes the learned director, fowls are not as refractory to the bacilli of tuberculosis of mammalia as it is believed. The infection by ingestion can be manifested by occult lesions which are specially found in the liver.

These experiments establish beyond a doubt that fowls can be infected by feeding with mammalian tuberculous matters, human or bovine, and yet only present occult microscopic lesions. Anyhow microscopic lesions have already been obtained by Arloing and others in the liver, spleen and intestines of fowls being fed with homogeneous cultures of human and bovine bacilli, or with tuberculous viscera of rabbits and guinea pigs infected with sputa or juice of bovine lesions.

It was, however, very important to show that such a kind of lesions existed in fowls as well as in other animals.

* * *

TUBERCULOUS MILK.—That milk of tuberculous cows is injurious is a fact which is generally recognized and the recommendation of almost all hygienists is to boil it before using it,

under the possibility (if that measure is neglected) of contamination. And yet it appears that there are pathologists who, if they do not deny the danger possible, they at least refuse to recognize it as great as it is by others. From that standing of ignoring all precautions, of boiling the milk before using it, it seems that there is but a short step. No doubt it is a very dangerous one.

Indeed in the *Deutch. Tier. Wochens.* there has been an article on the subject, where the question is put: *Is Milk Infected with Tuberculous Bacilli Very Dangerous for Man?* This appeared in the *Annales of Belgium*.

The German Imperial Bureau of Hygiene has ordered in Prussia, Bavaria, Saxony, Wurtemberg, Baden and Hesse, investigations to be made to the effect of establishing the respective importance of the digestive and respiratory apparatuses, as doors of entrance to tuberculous infection. District veterinarians were requested to inquire as to the use of milk coming from cows affected with mammary tuberculosis with elimination of tuberculous bacilli in the milk. These veterinarians carried their work from 1905 to 1909 and the general reporter mentioned in his official answer that 113 cases of mammary tuberculosis were found, 68 in Prussia, 14 in Bavaria, 6 in Saxony and Wurtemberg, 10 in Baden and 9 in Hesse. The milk of 69 cows was used during a very long time in its natural condition by 360 persons, among which 151 were children; that of the other cows was used after boiling by 268 people, among which were also many children. In the first group only two children, both aged two years, had tuberculous adenitis of the glands of the neck. Their parents, brothers and sisters, older, remained absolutely free from lesions. Nevertheless, the growth of the two tuberculous children was normal and the tuberculous inflammation subsided with time. Besides these two positive cases of tuberculosis due to the absorption of tuberculous milk, the report mentions twelve doubtful cases. The glands of the neck were enlarged, but no microscopic diagnosis was made, and a further examination revealed that, here again, the morbid troubles had subsided and disappeared. Other cases of tuberculosis were first

attributed to the ingestion of tuberculous milk but it was afterward demonstrated that the infection had taken place with bacilli of human origin.

Among the 268 persons which had taken tuberculous milk after being boiled, the cases of cervical adenitis were still greater; 12 cases among 133 children and one among adults.

The conclusions of the reporter were that the danger of tuberculous infection by ingestion of tuberculous milk is not as great as it has been believed up to this day, and it seems very small compared with that which results from immediate contact with persons affected with open pulmonary tuberculosis.

* * *

ASINE TUBERCULOSIS.—Among solipeds, donkeys are the animals which have but little receptivity towards tuberculosis, and to overcome the resistance that they offer to experimental infection, it is necessary to resort to the most severe mode of inoculation, the intravenous injection. The resistance that they offer in regard to natural contamination is also very great, as in spite of the very defectuous hygienic conditions in which they are generally kept, tuberculosis among them is extremely rare.

There are the remarks made by Mr. E. Cesari in publishing in the *Hygiene de la Viande et du Lait* the result of a post mortem which he made of an animal killed at the Abattoir of Hippophagy. The case is probably the first one on record and certainly it deserves attention by the extent of the lesions and the peculiarities that those of the intestines presented, forming an entirely special type, without analogy with the various forms that may be found in intestinal lesions of tuberculosis of man or of the other animal species.

There were tuberculous lesions in both splanchnic cavities. In the thorax, those of the lungs were enormous. There were tuberculous masses of various sizes, white, compact and without any apparent marks of caseous degeneration. The visceral pleura was considerably thickened and on a level with the sub-pleural pulmonary nodules it formed true sclerous caps, covering the pro-

jection of the pulmonary tubercles. There were but few bacilli in the pulmonary lesions. The bronchial, prepectoral and mediastinal glands were enormous, hard and compact with few centers of caseous degeneration, where the bacilli were very abundant. In the abdomen, the peritoneum showed numerous flat patches of tuberculous deposits on the diaphragm. The liver, spleen and kidneys are also the seat of a great number of tuberculous nodules where bacilli are found. The abdominal glands were also diseased.

All these lesions which after all may be compared to the sarcomatous form of tuberculosis in horses may have been already observed, even in various conditions; but it is in opening the digestive canal that Cesari discovered the specific lesions and which at first glance he hesitated in considering as tuberculous.

"These lesions consisted in an hypertrophy of all the Peyer's patches of the intestines. In the entire extent of the mucous membrane, in the floating portion of the small intestines, the large and small colon, Peyer's patches formed projecting elevations, round or discoid, slightly cupulated, on their surface and looking somewhat like pants-buttons fixed on the mucous membrane. On the level with the ileum, the patches measured the size of one franc piece, say a twenty-five cent coin, they were in very great number and very close to each other. Absent, of course, in the cæcum, they were in the colon arranged in parallel rows along the great axis of the intestine. Over the patches, the mucous membrane had a honeycomb aspect. There were no ulcerations. In sections made for microscopic examinations, bacilli were found in the tuberculous nodules of the intestines." Inoculations to guinea pigs and rabbits were positive in their results.

In publishing this interesting post mortem, it is evident that the author desired to call special attention to those lesions of the intestines for their rarity first and again because they may have been present already in other animals and had not been searched for or had been overlooked.

OVARIOTOMY IN EWES.—In the *Archiva Veterinara*, Prof. G. Podoska, of the High Veterinary School of Bucarest, publishes a new method to perform that operation in those animals which he calls *extra-peritoneal ovariectomy*.

He first recalls that ovariectomy in ewes is performed through the flank and then gives a minute description of the anatomical disposition of the genital organs of that animal, specially of the conformation and condition of the broad ligament, which allows the easy exit of the ovaries from the abdominal cavity and which the surgeon will do well to make himself familiar with.

To perform the operation which is executed on both flanks, the author uses a curved bistouri, a long-branch forceps (a Pean's model), two pairs of curved scissors, needles, silk and catgut, all well sterilized. A diet of twenty-four hours is necessary. The animal is kept standing or better laying down. The skin is shaved, washed and aseptized.

The various layers which are to be divided are: 1st, the skin, soft and very supple; 2d, abundant cellulo-adipous tissue; 3d, the muscle great oblique of the abdomen, thin with its fibres running obliquely downwards and from forwards backward; 4th, the small oblique whose fibres cross the preceding; 5th, the transverse muscle with its fibres almost vertical; 6th, the fascia transversalis or sup-peritoneal aponeurosis, and 7th, the peritoneum. The operation is divided in three steps:

1. *Incision of the Skin, Muscles and Aponeurosis*.—Three or four centimeters long, vertical or slightly oblique forward or backwards, shall be made four centimeters in front of the muscles of the thigh and will start 3 centimeters from the line which unites the transverse processes of the lumbar vertebræ.

2. *Exposure of the Ovary—Ligature—and Resection*.—The edges of the wound being kept apart, through the peritoneum, the broad ligament is observed; a gentle pulling on this brings the ovary in sight, when it is taken hold of with the forceps, leaving it covered with the peritoneum; a ligature is applied on the peduncle and the ovary excised.

3. *Suture of the Abdominal Wound*.—The muscles with catgut by Glovers stitches, the skin with interrupted stitches of silk. The wound is covered with collodion dressing.

After Care.—The ewe is given a good clean litter, and she receives half ration for a few days. Cicatrization is obtained generally in eight days.

Prof. Podoska has operated on quite a number of animals with this process and the recovery of his patients, some 35 in number, has been in eight or ten days by first intention. He insists on the value of the method which does not expose the animal to peritoneal infection and recommends its application principally for mares in which, he says, ovariectomy performed by the other methods is almost always followed by fatal complications.

* * *

A WELL-EMPLOYED CAREER.—To change a little from serious subjects, let me finish in recording the balance sheet of a practitioner's thirty years' career, which I find in the *Revue Veterinaire*. It is that of a country veterinarian.

Castration—3,018 bovines castrated by bistournage, 40 bulls operated with uncovered testicles, 430 horses with clamps, 35 cows ovariectomy, few jackasses and male mules emasculated. No accident complications or fatal ending.

Bleeding, 2,640; Setons, 150. Obstetrical Operations.—Out of 270 accouchements, failures were about 1 per cent.; 2,400 artificial and late deliveries without bad results; 180 reductions of uterus and 10 Cæsarian successful operations.

Amputations of horns, 150 a year; prolapsus of the rectum, 2 in bovines, 2 in dogs, 30 in horses, 450 in swine. Bad results only in those were below 1 per cent. Firing 14,685, without accidents.

Among the diseases treated are mentioned: 5,400 cases of anemia in poorly fed cattle, lymphadenia in bovines, lymphangitis, sore throat, anasarca, chorea, conjunctivitis, enteritis, urticaria, diarrhoea. 3,132 cases of parturient apoplexy were treated;

54 of fistulous withers; 10,500 of indigestion; 2,400 of tympanitis; 5,160 of gastritis or gastro-enteritis. Without counting numerous cases of mammitis, of arthritis, nephritis, colics and ureteritis, foot and mouth disease and tuberculosis.

This is certainly a professional life which has been well filled. And yet it is said that the financial returns were, what I would call, more than insignificant.

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BIBLIOGRAPHY.—It is some little time since I have received the twenty-fifth annual report of the Bureau of Animal Industry for 1908. When I say some little time, I ought to add too late for me to notice it last month. After this apology, let us look into it.

This report is always the same book, same form, same printing, about same size and always the same nature of contents, viz., evidences of the excellent work done by the bureau and record of the valuable publications coming from the various departments of this great organization, superior to any all over the world and which has rendered such services to agriculture, saved so many millions to the United States and beyond doubt has proved that *veterinarians alone* are the scientists in whose hands its successful running can and must be left.

As it is known the organization of the bureau with its principal officers, Dr. Melvin as chief and A. M. Farrington as assistant chief, is divided into a number of divisions. At the head of each of those, there is also a chief and altogether almost the entire staff is composed of members of the veterinary profession and naturally the principal bulk of the contents of the twenty-fifth report is from veterinarians.

The chief, Dr. Melvin, besides his own report, has reproduced his article on "The Economic Importance of Tuberculosis of Food-Producing Animals," which met with such a success at the International Congress on Tuberculosis in Washington, and also the paper which he presented before the A. V. M. Association in Philadelphia on "The Control of Hog Cholera by Serum Im-

munization," and the circular relating to "The 1908 Outbreak of the Foot and Mouth Disease in the United States." The assistant chief, Dr. Farrington, has an article on "The Need of State and Municipal Meat Inspection to Supplement Federal Inspection."

The Pathological Division is represented by the several publications from Drs. J. R. Mohler and Henry J. Washburn "Causation and Character of Animal Tuberculosis and Federal Measures for its Repression," "Transmission of Avian Tuberculosis to Mammals," "Infectious Anemia, Mycotic Lymphangitis and Chronic Bacterial Dysentery," "Malta Fever and the Maltese Goat Importation." "Vitality of Typhoid Bacilli in Milk and Butter," "The effect of Smelter Fumes Upon the Live-Stock Industry in the Northwest," by Dr. R. J. Formad, of the same division.

From the Biochemic division, there is from Dr. W. B. Niles, "Field Tests with Serum for the Prevention of Hog Cholera." The experiment station with Dr. E. C. Schröder, superintendent, is found with his article on "The Relation of the Tuberculous Cow to Public Health."

The illustrations of the report consist in eleven large plates and seventy-two figures in the text. Considered as a whole, the twenty-fifth annual report, if it contains the majority of publications already issued in the shape of circulars from the Bureau, it forms a most valuable volume. It has already been my pleasant duty to call the attention of our readers to these publications as they have come to me, some of them have already appeared in our pages, but yet it can do but good to recall their titles, the names of their authors to make parties interested get them, read them and benefit by their contents.

It is by such good work that veterinarians can be appreciated!

* * *

KOMPENDIUM DER AUGEWANDTEN BAKTERIOLOGIE FÜR TIERARZTE.—(Compendium of Applied Bacteriology for Veterinarians) is a little volume of 272 pages by Professor F. Glage.

Chief Veterinarian to the Hamburg Veterinary Department, and published by the well known firm of Richard Schoetz, of Berlin.

Illustrated by sixty figures in the text, this book is presented as a guide to serve to veterinary practitioners as well as to those who are engaged in meat inspection and in control of food inspection, considering as it does the most important parts relating to bacteriology. With this object in view, which the author has endeavored and succeeded in realizing, he has divided the contents of the compendium into eight chapters in which he treats of the organization of a laboratory, of the microscope and its accessories, and after a concise consideration of the methods used in bacteriology, of the media of cultures, etc. In a special chapter he examines the various methods of investigation, selection of material, cultures, inoculations, etc. In another chapter, general notions are given on microbes, and this is followed by one on the application of bacteriology to veterinary practice. This subject of bacteriology of diseases is divided into two groups and that relating to the inspection of meat embracing all kinds of food products has received from the author minute attention. The last chapter treats of milk control and is well treated.

All the chapters contained in the Compendium are very interesting and presented in a comparatively concise but yet clear and comprehensible manner. It will prove a valuable little addition to the literature on the subject and by the complete index of the last page gives to the busy worker a rather complete and compact list of books of reference.

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PAMPHLETS RECEIVED.—Volumes 3 and 4 of *Veterinary Journal from Dorpat*; May and June issues of the *Agricultural Journal of the Cape of Good Hope*; *The Transvaal Agricultural Journal*; *The Journal of the McKillip Vet. Coll. Alumni Association*; *Chicago Veterinary College Quarterly Bulletin*; Bureau of Animal Industry Circular 153 on the "Dissemination of Dis-

eases by Dairy Products and Methods of Prevention"; the third annual report of state veterinarian of Alabama, Dr. C. A. Cary, and Veterinary Notes from Parke, Davis & Co.

A. L.

OFF TO THE A. V. M. A. CONVENTION.

When this number of the REVIEW reaches the subscribers' desks, many of them will have already departed for what promises to be the greatest veterinary convention ever held in this country, and at the same time, the one farthest from a central point. This is most gratifying because it is an index of the strength and earnestness of the organization which does not permit distance to deter it from responding to a call of the cause.

Every veterinarian that can possibly do so, whether he be a member of the American Veterinary Medical Association or not, will go, and hundreds of new names will be enrolled on the membership list during the several days' sessions at San Francisco, September 6 to 9; so that the organization, like its individual members in attendance, will gain in strength and health and wisdom as a result of its visit to the progressive westland; and those of its members and others in the profession who cannot find it convenient to go, will be kept in touch with what has been accomplished there, through the medium of their faithful chronicler of veterinary matters in its next monthly visit to their offices. God speed those that are starting on their yearly pilgrimage, and God bless those others faithfully performing the duties which necessitate their remaining at home.

THE RETURN OF THE HORSE FOR FASHIONABLE PURPOSES.

"Indications are by no means wanting that a reaction is setting in which points to a return—at least for fashionable purposes—to the horse and carriage, and a desertion of the auto-

mobile, at least for social events in which ladies play the leading part. Ladies as a rule are the very first to discover what best suits them, what lends most to their attractiveness, and what is the least common and most exclusive way in which they can occupy the pleasant hours of their fortunate existence. Made to be admired, born to be sought and courted, they have lain hidden behind the masks and goggles and dustcoats of automobile armor much longer than their sharp perception would give them credit for. Woman, for once in her life, lured by the speed and excitement of automobiles, has actually forgotten herself until she has discovered that gallant youth is turning toward the prettier and more attractive form of gracefully attired beauty in a splendidly appointed park phaeton, or in a smartly cut and exquisitely fitting riding habit, while her willowy form swings bewitchingly to the every movement of her thoroughbred mount. How it is that ladies have so long forgotten themselves is past the understanding of the opposite sex who have known them so long, wooed them so persistently, and admired them so thoroughly. Perhaps it is the men after all who are accountable for it, but, be this, however, as it may, the ladies are changing, and in devout thankfulness we fall upon our marrow bones and murmur, 'Thank God.'

The above is at once so encouraging to veterinarians and so characteristic of the editor of *Bit and Spur* that we have lifted it bodily from the editorial columns of that most excellent periodical (August 1910) and reproduced it for our readers.

The REVIEW predicted the return of the horse among select circles in reporting the unusual success of the last national horse show at Madison Square Garden, New York, in November, 1909, but did not *directly* credit the ladies as being the medium through which it was to be accomplished. If the editor of *Bit and Spur* is correct in his deductions (and we believe his judgment excellent in matters where ladies are concerned), then indeed we have cause for rejoicing. For what the ladies want is what the men provide, and, besides, it costs much less to provide and maintain a beautifully appointed horse-drawn turnout

than to maintain automobile turnouts, the most expensive of which are wanting in *finesse*, and lack the beauty and dash of a "coach and pair."

A REPLY TO DR. OLIVER.—One of the REVIEW collaborators, replying to Dr. Oliver's request for an expression of opinion as to what the case he describes on pages 657-8, August REVIEW, was, says: "From Dr. Oliver's description of the lesions manifested in the Berkshire boar in question, particularly with reference to the appearance, size, consistency and location of the cysts, it seems quite evident that he was dealing with the *Cysticercus cellulosae*, the larval stage of the *Taenia solium* of man, otherwise known as the pork measles." As this expression comes from an authority on pathology, we feel sure that Dr. Oliver will be pleased to have it published for the benefit of his brothers in the profession, thereby making his article doubly valuable.

HORSE SHOW ON THE MINNEWASKA.—When the steamship *Minnewaska* reached the port of New York, from London, she had 226 horses on board—a rare selection of draft breeds consisting of French Shire, Percheron and Belgian stallions and mares.

The owners of these beautiful animals were Samuel Bell and William Bell, of Wooster, Ohio; Worth Dunham, of Wayne, Ill.; J. Hamilton and Mr. Hawthorne, Canada; E. Hobson, Clifton, Ill.; W. V. Pewis, Wayne, Ill.; W. E. Pritchard, Ottawa, Canada, and J. G. Truman, of Bushnell, Ill., and these gentlemen conceived the idea of holding a horse show on the steamer, and quickly put their ideas into execution. The entries were gotten ready rapidly and Mr. Edwin Hobson was appointed judge. An entry fee was charged, which was divided up as prize money. The show was held between decks, and, while the parade was somewhat restricted, great enthusiasm was felt by the exhibitors, and the passengers participated in an enjoyment never before experienced at sea.

Dr. L. M. STECKEL, formerly of Columbus, O., holds the position of "Special State Dairy Inspector of California."

ORIGINAL ARTICLES.

SOME EFFECTS OF INTERNAL ADMINISTRATION OF CARBOLIC ACID.*

BY L. M. HURT, EAST LANSING, MICH.

In selecting this subject as a topic for study I have been prompted by curiosity aroused by the peculiar and suggestive nature of several cases which I have had occasion to observe during the past year. While these cases were suggestive of poisoning, they were perplexing at the time, and the relation between them was not at first well defined; especially since they were so oddly at variance in the more prominent symptoms displayed. When carbolic acid poisoning was finally decided upon as a working hypothesis, many problems presented themselves for study, all of which were exceedingly interesting. When worked out as well as possible under the limitations imposed by the facilities at hand and by the almost entire lack of literature upon this particular line of work, it became plain to me that there was involved a phase of carbolic acid poisoning which was important, which had received but little attention at the hands of toxicologists and practitioners, *i. e.*, the cumulative effect of the continued use of carbolic acid in sublethal doses.

Its study is opportune because of the rather widespread use of carbolic acid in the treatment of Contagious Abortion at the present time. (This report of cases and discussion of the phases of poisoning produced is not to be taken as an argument against the use of carbolic acid in this connection, as its toxic action in two of the cases was influenced by conditions for which the treatment was in no way to blame. I am of the opinion, however, that

*Presented at January 1910 meeting Michigan State Veterinary Association.

a reduction of the time over which the treatment is extended would not detract from the efficiency of the same, and would probably obviate the embarrassment of having to treat a few animals for the character of disorder which I will describe.)

A BRIEF RESUME OF THE NATURE OF CARBOLIC ACID, ITS ACTIONS, USES AND TESTS.

Carbolic acid is variously known as phenol, phenyl alcohol, phenilic hydrate, phenic acid and coal tar creosote. It crystallizes in long prisms which melt at 41-40 degrees; when melted forms a colorless limpid liquid boiling at 182 degrees, and distills without decomposition. The pink, red or brown color which it sometimes possesses is in proportion to the amount of impurity contained. It does not redden litmus paper, but produces a greasy stain upon paper which disappears upon exposure to the air. It has a peculiar aromatic odor, burning numbing taste even in small strengths; burns with a sooty flame at high temperatures. It dissolves readily in benzine, carbon bisulphide, chloroform, ether, and mixes in all proportions with glycerin, alcohol, glacial or acetic acid; it coagulates albumen, the precipitate being dissolved in excess of albumen; it dissolves iodine without changing its properties; it dissolves many resins, also sulphur.

It was discovered in 1834 by Runge and has been used very widely since its antiseptic properties were brought out so strongly by Lister in 1863. It has many uses in medicine which are somewhat varied, but by far the greatest amount is used as a disinfectant. It is used in the manufacture of salol, salicylic acid, and several dyes. It has many market forms, including various liquid preparations containing varying strengths of carbolic acid, alone or in combination with cresol or cresylic acid. Carbolic soaps and powders differ in carbolic content up to 10 per cent.

Tests, Bromine Test.—A precipitate of tri-bromo-phenol is rapidly or slowly formed, according to the amount of phenol present in the tested solution, by the addition of bromine water to the suspected solution. From this precipitate a quantitative calculation of its presence may be made.

Euchlorine Test.—Concentrated hydrochloric acid is allowed to act upon potassium chlorate for 30 seconds, then diluted with $1\frac{1}{2}$ volumes of water, remove the gas by blowing, pour in a layer of strong ammonia. Blow out the fumes of ammonium chloride and add a few drops of the suspected solution, whereupon a rose-red, blood-red, or red-brown tint will appear, according to the amount of phenol contained in the sample.

Ferric Chlorid Test.—When ferric chlorid is added to a solution containing carbolic acid, a violet color, or deep purple when in urine, will appear, but on account of the action upon neutral salts and other substances which may be present in urine, the reaction may be attended by a mauve color and be open to question. Where care is used, however, this is a delicate test, as phenol is recognized by this means when present in exceedingly small amounts.

Ammonia and Soda Hypochlorite Test.—Solutions containing 1-5,000 will show test. Add one-fourth the volume of ammonium hydrate to the suspected solution and then a small quantity of sodic hypochlorite solution, avoiding excess. A blue color appears and is persistent and perhaps hastened by boiling. Even smaller quantities may give this test if allowed to stand.

Quantitative Analysis of Urine with Barium Chloride Solution.—The normal sulphates are precipitated in cold solutions by barium chlorid and acidulating with HCl. Then boil the solution and a second crop of precipitate is obtained which represents the precipitated sulphate formerly combined with phenol. From the weight of this precipitate the amount of phenol is determined by the following formula: $C_6H_5HSO_4 : BaSO_4 :: 174 : 233$.

Uses.—The use of carbolic acid in human medicine has always been attended with a certain amount of misgiving because of the well known fact that idiosyncrasy is often encountered in which serious if not fatal poisoning results. This has been true under a variety of conditions, both in external and internal administrations. Quite a range of susceptibility has also been observed among domestic animals, not only among species, but among animals of the same species, a fact which applies equally

well to all medicines and must be borne in mind in their use in our practice. Young animals are more susceptible than old ones to carbolic acid poisoning, and its use in any form seems dangerous in cats, less so in dogs. Absorption from the skin has been repeatedly demonstrated in thin-skinned animals, and when applied warm or in a warm room, is believed to occur in the larger domestic species.

Respecting this well-established danger of fatal results, its use internally in human practice has gradually narrowed down almost entirely to the checking of profuse intestinal secretions, and to its anti-fermentative action. It is found highly useful in cases of ichorous eructations or disagreeable emanations of any character due to fermentation or putrefactive agencies, not because it is a successful deodorant, since it is a failure in this respect.

In veterinary practice it has been used internally in various strengths and forms in the treatment of influenza and tetanus of horses contagious pleuro-pneumonia and Texas fever of cattle, anthrax of cattle, sheep and horses, septicemias of various natures, and in numerous cases giving a foul discharge due to putrefaction or gangrene, as in septic pneumonia or gangrene following severe pneumonia or strangles. The dose varies considerably according to different authorities, some giving as low as 15 minims, others up to two and one-half drams, for the horse and cow. While one-half-ounce doses have been given to these animals and even one-ounce doses have been recorded without serious results, it is generally conceded that except in cases of emergency, this sized dose is to be considered dangerous, and the risk is not justified. Most authorities seem to gather around two drams as the maximum dose for a thousand-pound animal, figuring four drams as the minimum lethal dose.

Carbolic Acid Poisoning.—Unfortunately the term carbolic acid has been applied by laymen as well as medical men to almost all forms of disinfectant solutions containing coal-tar products, some of which contain but a very little phenol. This has given it a prominence as a dangerous poison, which it is thoroughly capable of fulfilling, but is not guilty of.

Acute poisoning is by far the most common form, marked by sluggish pupils, sometimes contracted to pin-point size, others dilated, faintness, staggering gait, clammy, cool and perhaps moist surfaces, pulse small and wiry, dyspnoea marked, the breathing becoming more and more shallow. Death results from respiratory failure in these cases, as the heart often beats for some little time after respiration ceases. Convulsions may be noticed, especially in the smaller animals. This may be general, or confined to one or a few limbs. Coma is marked in most acute cases, while in those of longer duration and less serious nature, cerebral disturbances of a varied nature may be expected.

In all cases changes from very slight to very marked are noted in the urine. (It appears in solution largely in combination with sulphuric acid and potassium as sulpho-phenic acid, or phenol-sulphuric acid ($C_6H_5HSO_4$) or more correctly, potassic phenol-sulphuric acid ($C_6H_5KSO_4$).) It is well known that hydroquinone and pyrocatechin are constant productions of a part of the phenol. A portion of the hydroquinone existing in the free state assumes a brown color. The separation of the carbolic acid by the kidneys begins almost immediately upon the absorption of the same into the circulation, and continues for 12-24 hours or longer, depending upon the fullness of the stomach. It is therefore continued over a much longer period in ruminants than in other species. It occurs in such quantities during this period of elimination as to make its presence unmistakable as compared with the small amount which is often found in the urine of herbivora, and occasionally in other species. The urine is darker than normal, sometimes assuming a dark brown color, which has been mistaken for hemoglobinurea. It may have a carbolic acid odor. Taylor, in his work upon Poisons, Their Nature and Detection, mentions the fact that dark green or purplish color may occasionally be noted in the fecal discharges.

Post-mortem examination is in the main disappointing. Aside from the eschars formed by the direct action of the acid, and the actual detection by the sense of smell, or by proper tests, of the presence of the acid, little else may be expected. No special organ

seems to be affected by its presence in dilute solutions, such as would be found in the circulation, with the single exception of the kidney, and occasionally the liver. The kidneys show signs of acute inflammation, no matter what the method of administration may be, giving rise to darkened urine containing casts and albumen. The cerebral disturbances are sometimes explained upon finding the vessels of that region engorged with blood, and the amount of fluid in the ventricles is likely to be increased. In such cases, the disturbances of the vaso-motor system is sufficient to account for the changes, but in the more acute cases, there is little doubt but that direct cerebral poisoning occurs. That the vaso-motor tone is destroyed is also manifested by the condition of the abdominal vessels which are uniformly distended and engorged. Even the smaller arterioles are noted for their distended appearance in these cases. The blood itself may not be greatly changed, although it is noted that it coagulates slowly. Its character probably depends more upon the character of the breathing immediately preceding death, than upon the change wrought by the presence of the acid. Echymoses in the lungs and pleurae are occasionally noted, and may be ascribed to the same cause, *i. e.*, paralysis of the vaso-motor system.

While a direct action upon the heart is possible in acute cases, it is altogether probable that in those cases of mild poisoning where increase in the force and frequency of the heart's action is noted, that is results from depression of vaso-motor tone, or obstruction to circulation offered by congested kidneys, or both. To affect the heart, it has been shown that very large doses of phenol must be given, and then a depressant effect is noted, not an increase, except temporarily.

Treatment.—Give albuminous drenches. In case of small animals and the horse, endeavor to remove the contents of the stomach, but it is well to remember that a syphon or pump must be used in vomiting animals, since the nerve supply of the stomach is so depressed that emetics will not work. Any sulphate is a direct chemical antidote, sodium sulphate being ordinarily advised in this connection because it is readily procured. This

has been advocated at different times by Baumann, and Sonnenberg *et al.* Dr. David Cernea, of the Pharmacological Laboratory of the University of Pennsylvania, proved the applicability of sodium and magnesium sulphates as a treatment, by experimental work upon animals (as reported in the *Philadelphia Medical Times*, IX. 592). He gives as the reason for this antidotal action, the formation of innocuous phenol-sulphates. As the sulphates are innocuous, they should be given in excess. (It is also noted that phenol combines with glycuronic acid and forms a harmless substance.) It is believed by some that the degree of poisoning is determined, or rather, limited by the extent to which the phenol is thus combined. Indeed it is definitely stated that phenol in dilute solutions is not poisonous until the amount is greater than can be neutralized in its effects by the above-mentioned combinations.

(Some clinicians use as a guide, the amount of sulphates in the urine. So long as barium chloride produces a precipitate which is about normal in amount, which is insoluble in hydrochloric acid while cold, they feel safe to continue the use of phenol. This same applies to the use of kresol and other coal tar derivatives. However, the conclusion that the sulpho-carbolates are harmless is not justified from experience, and we had better regard them as being less dangerous than phenol itself. There is grave probability that the action upon the kidneys is at all times marked, very possibly upon other organs as well.)

The following cases present in some instances perfect exemplification of some of the symptoms noted above, but in the main will be found to differ considerably, not only from descriptions of typical cases of carbolic acid poisoning, but from each other as well.

REPORT OF HOLSTEIN COW.

Wednesday, March 17, 1909, 8.30 a. m. Holstein cow 6 years old, in calf about eight months. Weight, 1,300 pounds. Has been dainty on dry feed for past few days, and failed to eat hay or silage on previous evening, at which time some bloating

was noted and she was placed in a box stall. Examination showed the presence of considerable flatulence; respiration, 82; pulse, 90; temperature, 103.1° F. Muscular tremors were marked especially in the neck and hind quarters; uneasiness was noticed, and occasional bellowing; few thin feces had been passed during the night. Urine was passed during examination, and was not of a character to excite any comment. The case seemed to be of the nature of indigestion, and treatment was prescribed accordingly, including placing of trocar and cannula and introduction through the cannula of one quart linseed oil and one ounce of creoline, and a quarter of an hour later one-half pint of alcohol, two ounces spirit nitrous ether, and water to make a pint. At noon one more quart oil and one ounce turpentine was introduced and the cannula withdrawn. (Respiration, 62; pulse, 70; temperature, 103.3° F. General expression better, and she was left lying comfortably. At 5.30 no appreciable change could be noted in condition. Respiration, 50; pulse, 65 and temperature, 103.4° F.)

Thursday, 7.45 a. m. Respiration, 54; pulse, 60; temperature, 102.8° F. No feces passed during night. Some gas had accumulated, which passed off with walking exercise. Examination at this time revealed the fact that movement of the rumen, in spite of its relaxed condition, was very slow and lacking in tone, movement occurring at intervals of one and one-half to two minutes. Prescribed one pint of oil to be given three times during the day, and tempt the appetite with roots and silage in small amounts at frequent intervals, and to report changes, if any, during the day.

Friday, 8.30 a. m. Small amount of feces during the night, but action of rumen still very slow. Respiration, 24; pulse, 54; temperature 103° F. Made rectal examination to ascertain condition of fetus, which though difficult to reach was found living. Enema brought about a peck of dried feces in addition to the amount removed by hand from rectum. Left tonic prescription, and directions to give oil as upon previous day, the second dose

to contain eight drops croton oil. 5.15 p. m., animal resting quietly and no examination made.

Saturday, 9.00 a. m. Respiration, 24; pulse, 56; temperature, 103.6°. Slight passage of feces during the night, and slight one during morning, assuming a watery consistency and foul smelling. General demeanor dull. Repeated tonic prescription and directed that the animal receive walking exercise.

Sunday, 9.45 a. m. Considerable uneasiness displayed. Bowel passages thin and watery, greenish in color, and very foul; scant in amount. Drank some water for the first time. Gave a pint of oil, and directed that another be given in the evening, and that she be exercised during day at least one-half hour. 4.00 p. m., resting quietly.

Monday. Bowels still discharging watery stools, slight in amount, very foul smelling. Abdomen very pendulous and atonic. Attendant observed that it smelled as if they had been disinfecting the stable, but even then the thought did not enter my head that it might be a case of poisoning due to carbolic acid or any other medicine which may have been given. No apparent change during the day.

Tuesday. Respiration, 26; pulse, 58; temperature, 104.1° F. Slight passage during the night of a little firmer consistency, but dark colored. General demeanor seemed brighter, and she looked for water, but refused silage and other feed.

Wednesday. Decidedly worse, showing cerebral disturbances much more prominently than heretofore, standing with the head pressed up against the corner, bellowing often. Bowels discharging a thick dark green fluid. Flushed out rectum with cold and warm enemas, and examined calf, which was found to be very active. Prescribed tonic of nux vomica and alcohol, and walking exercise during day.

Thursday. No improvement, except the cerebral excitement was less marked. Abdomen painless and pendulous. Gave tonic prescription, and directed to have rectum washed out three times during the day. Respiration, 28; pulse, 66; temperature, 103.4° F. Two pails of water were taken just after dinner.

Friday. Respiration, 23; pulse, 72, and much weakened; temperature, 104.2° . Staggering gait noted, and from general condition it was seen that she would not last long. More out of curiosity than from any other reason a stomach tube was passed and I endeavored to extract a sample of the ingesta, but failing in this I introduced a pail of water at body temperature, and attempted to siphon out some of the contents. Only a small amount of dirty greenish sour smelling water returned, before she went down. Gas formed rapidly during the morning, requiring the use of the trocar and cannula. She was led out into the yard and allowed to lie in sunshine under blanket during the morning. At noon she was aroused, got up readily, walked in the barn to her stall, fell over and was soon dead.

Post mortem revealed presence of well-developed foetus of between seven and eight months old. The digestive organs were clear of inflammatory appearances, but the festoons of intestinal vessels were highly engorged with dark blood. Blood coagulated very slowly and feebly. Heart seemed to be softened slightly, but this was not verified by microscopic examination. Pericardial sack was quite full of sanguinolent exudate. Liver quite firm, but samples of same taken for examination did not show marked change from normal. State of food in stomach suggested that little motion had taken place for several days, and the odor of the food was strongly suggestive of dead oil. Lack of putrefaction was marked. Paralysis of the rumen seemed apparent, but cause for the same was apparently lacking. However, since the appearance of a second case with much the same symptoms, and upon learning that the carbolic acid treatment had just been completed for a period of ten days, samples of ingesta and urine were taken for analysis. Cotyledons of uterus much enlarged, and fetal cotyledons showed some degeneration with purulent exudation, which so far as I could determine by use of microscope was non-specific. The kidneys showed plainly an inflammatory condition, the left one being about one-fourth larger than the opposite one, and showing numerous darkened areas upon surface, and cloudy appearance of pelvis. Some debris

in the pelvis of each kidney proved on examination with microscope to be cellular material. The glomeruli were uniformly enlarged and surrounded by an inflammatory zone, or else by an area of infiltration. The structure of a portion of the convoluted tubules was in a state of parenchymatous degeneration, some of the cells even suggesting in their appearance fatty degeneration. Cellular material and other debris was noted in the convoluted portions, which formed well defined casts in the straight portions.

The samples of ingesta and urine taken at the time of the post mortem were analyzed by Dr. Jodidi and myself upon the 29th, at which time a sample of the urine of second case of this nature was tested. Both showed unmistakably the presence of phenol. This urine was taken nine days after the administration of the last dose of carbolic acid, and showed that it had been retained in the system to a considerable extent.

REPORT OF GRAY SHORTHORN COW. (26b.)

First showed symptoms of constipation and inappetence March 22d with general symptoms a great deal similar to those noted in the Holstein cow, *i. e.*, those of general depression and attending indigestion. Respiration, 21; pulse, 60; temperature, 103.2° F. Contents of the rumen so far as could be determined from external examination, normal in amount and consistency. Questions upon history of case brought out the statement that upon the 20th she, like the others in the stable, had just completed a ten days' treatment with carbolic, during which 140 c. c. of a 5 per cent. solution were given daily in the feed, and 30 c. c. of the same strength solution was injected under the skin of each animal. (2-2¼ dr. c. a.)

Prescription given with intent to counteract the effect of any phenol that might be present in the system, *i. e.*, sodium sulphate, iron sulphate, and sodium bicarbonate, in Rx 121. To assist in bowel movement raw linseed oil was prescribed in pint doses twice daily to be continued until further orders.

Tuesday 23d, Wednesday 24th, Thursday 25th, no apparent change in condition; small movement of bowels occurring

daily of normal consistency; temperature remaining very steady, *i. e.*, hovering around 103; heart action in general strong; pulse running from 48 to 60; respiration nearly normal except when forced to move; movement of the rumen very slow, occasionally occurring as slowly as once in two minutes; rumination entirely absent.

Friday 23d. Dark green discharge from the bowels commenced early in morning and continued at intervals of about two hours during the day and becoming progressively more watery. Depression increased; heart action continued firm but quickened, rising from 55 to 65 during the day; temperature, 103.4° F.; no feed touched during the day, although tempted several times with roots, silage, and bran mash; surface of body quite warm, especially about the head and ears and base of horns. Slight movements of rumen occasionally attended by a belching sound, but no actual rumination. Abdomen pendulous and slack in morning, became slightly distended with gas during the day, but this passed off with walking exercise. To prevent recurrence of this symptom one-half ounce of creolin was added to the evening dose of oil.

Saturday 27th. Respiration, 22; pulse, 66; temperature, 103.8° F. Normal passage of dark green foul-smelling excrement during the night which was observed to smell somewhat similar to that of the Holstein cow. (Manly.) Depression continued and somewhat increased, to which was added some cerebral disturbance manifested by the pressing of the nostrils against a projecting object for several minutes at a time. Action of rumen very slow, only occurring at intervals of very nearly two minutes. Gave tonic prescription containing nux vomica, gentian and alcohol; discontinued use of oil and reduced dosage of sulphates one-half, also directed walking exercise be given at least three times during the day, and for not less than one half hour at the commencement, in addition to what exercise she would take in the exercise lots with the other cattle.

Sunday, Monday and Tuesday brought no apparent change in condition, except a gradual improvement in tone of rumen,

and perhaps in body. Continues to press nose against objects, although not so frequently, nor for such long periods as before. Has commenced to lick the ground and at the cement wall of the tank. Urine sample taken on Monday 29th showed presence of phenol in well-marked quantities. This was somewhat surprising, considering the fact that nine days had elapsed since the administration of the last dose.

Wednesday, April 1st. Slight appetite shown, especially for the dry feeds; appetite for dirt and tendency to lick walls continues. Salt was given, but little was taken; movements of the rumen increased in force and frequency, and general expression much improved. Respiration, normal; pulse, normal in count, but a little soft; temperature, 103° F. Sample of urine showed the presence of phenol in fairly large amounts. Test sample taken from three cows standing near her showed *no phenol present*.

Friday, April 2d. Exercises were continued, no medicine prescribed for present. Appetite increasing, ate a few roots, and a small bran mash; feces assuming a more normal appearance and consistency. Walking exercise was willingly taken, traveling as far as Grand Trunk Railroad crossing at least once during the day.

Saturday, April 3d. Careful examination made of all parts of exterior and found animal seemingly recovered except in flesh. Temperature, 102.6° F. Subsequent taking of temperatures during the test showed that her temperature was normally high. Advised increasing her feed cautiously. Morning's milk, 6 pounds. (Milk flow had almost entirely ceased.)

April 5th. Milk yield increasing steadily; appetite voracious; general demeanor contented and spirited. She received half feed, and received full feed at the end of ten days following. Recovery uneventful.

RED SHORTHORN COW.

March 28, 1909. Call by Brown. Cow had been in hospital barn for over three months, having been confined therein for

abortion, at which time she was ill for an extended period previous to and subsequent to the abortion. First illness was marked by extensive depression of the digestive apparatus, constipation alternating with occasional extremely liquid foul-smelling diarrhoeal passages. This was complicated by medication pneumonia brought on by the administration of a dose of oil by one of the attendants. During this period she was extremely lame in the left posterior, due to a bruised fetlock. The abortion may have been specific, or due to the symptoms and conditions mentioned, these having been of sufficiently severe nature to have caused it.

The first symptom of indigestion occurred during a course of treatment with carbolic acid for contagious abortion extending over a period of ten days. She went off feed gradually, and little was thought of it till the bowel passages almost ceased, when she was given the dose of oil above mentioned with the results given. At this time I first saw the case and prescribed hot applications to the abdomen, and daily dosage of strychnine and digitalis. After the abortion occurred, which was close to one month after the first appearance of sickness, she seemed to do better for a time, appetite returned, rumination became normal, or nearly so, but the pulse and respiration have been too rapid. The aborted calf was about six months along, dead, but not decomposed.

Upon the date mentioned, Friday, 28th, she was found to be quite depressed, coat harsh and erect, ears cool, limbs cool, but general surface of the body warm and markedly dry. Abdominal region retracted, but showed no pain or tenderness under pressure. She had eaten but little during the past twenty-four hours, and at the time of examination was chewing listlessly at a small bundle of hay, the roots and silage remaining untouched. Respiration, 44; pulse, 100; temperature, 102.6° F. Auscultation with the phonendoscope revealed a very marked renal pulse, especially over the region of the right kidney; heart's action as easily auscultated over the right side as upon the left. This upon examination proved to be due to the lower half of the right lung being non-functional; there was also found localized consoli-

dation of the left lung. The heart's action while giving a fairly strong pulse, was rather shallow, but heart sounds were normal. Feces passed during examination were normal in color, but small in amount.

Recommended that the animal be given regular exercise, put out of barn as much as possible, and as early as practicable, that she be put in pasture. No hope was held out for her recovery, since the examination seemed to indicate that she suffered from conditions of a chronic nature which would militate against her gaining flesh, or making a complete recovery for breeding purposes. Her age was in her favor, however, and since she was a valuable animal in health, it was decided to treat her. Rx. 126 containing tr. chl. iron, tr. gentian, fl. ext. nux vomica and alcohol was given for the purpose of stimulating the nervous system, assisting digestion, promoting appetite, and the iron as a general tonic. Observations at frequent intervals during the two weeks which followed revealed no apparent change in condition, except slight fluctuation in appetite, which at no time assumed a favorable condition.

June 8th. This animal reported as having made some gain during the past month, and being in better tone and condition, but had not yet been turned out to pasture, a condition which would probably result favorably in her case.

BROWN SWISS COW.

May 8th, Sunday, 5.30 p. m. Cow in only fair condition, having calved but two weeks ago, and having had horns removed but a week ago. Dehorned because she had broken off a piece of left horn at watering trough. Reported as having been a little finicky about feed for about a week, but had not stopped eating until to-day. Had shown peculiar symptoms during the day, such as raising the hind feet, holding hocks flexed for a few moments, then straightening the leg backwards a few times with a slight kicking motion before replacing the foot upon the ground. Was unsteady upon her feet at times, and when caused to walk, showed a distinct wobble in gait occasionally. She stood with

her nose pushed against objects for several minutes at a time; eyes dull, lids heavy; ears warm, muzzle dry; pulse, 68; respiration, 24; temperature, 101° F. Contents of rumen less than normal, but seemingly normal in consistency; urine and feces passed during examination and were apparently normal in color and consistence.

The violence of the heart beat overlooked until by chance my thigh came in contact with the base of her neck while I was examining her throat latch for the cause of a wheezing sound; a pounding motion was distinctly felt, whereupon the heart was examined for several minutes, during which it was noted that the pulse varied from 68 to 78 per minute. The intensity of the beat continued. Outline of the heart was clearly outlined as high as the middle of the chest wall, and as far back as the ninth rib. Impact against the chest wall distinctly felt over an area as large as the hand. The pounding felt against my thigh before mentioned was due to a distinct jugular pulse showing plainly to the posterior border of the maxilla. Auscultation revealed the pulse very plainly over the region of the left kidney; it was distinctly felt in the peripheral arteries out to and including the plantars; pulse cause the raising of the ears at times. Further examination postponed until all exciting conditions should be absent.

8.30 p. m. Animal seems somewhat more depressed than before. Was lying quietly upon left side. Pulse, 68; respiration, 22; temperature, 101° F. Did not arise until spoken to repeatedly and urged, when she arose awkwardly, weaved perceptibly for several minutes, finally steadied herself, with head down and eyes partly closed. Pulse, 74; respiration, 22. Auscultation with phonendoscope revealed no hissing sounds in the region of the heart, but the first heart sound enormously increased; second heart sound smaller than normal, and occasionally could scarcely be distinguished. Pulsation at the heart was attended by corresponding pulsation of the jugular vein, followed almost immediately by the carotid pulse. Auscultation over the rumen revealed motion in that organ at intervals of about one and a-half

minutes, no gas present, and food seemingly in normal condition as regards moisture content. Careful auscultation over right flank failed to reveal any intestinal movement whatever. No tenderness in any part of the body.

During the course of the examination, which covered a period of three quarters of an hour, there were two periods lasting about two minutes each, in which there was some harshness of the breathing, with slight acceleration. The cause for this was found upon examination of the region of the pharynx and larynx, to be a slight edema. No other edema was present upon the surface except a small area in front of the udder.

Her milk flow was reported as having fallen off from 36 pounds to 22 pounds in the last forty-eight hours, this being the final reduction from a maximum of 48 pounds when she freshened, and which had been falling off gradually during the past week. No medication was prescribed that night, but orders left to watch for any radical change in condition of breathing or circulation, or other untoward symptoms.

Monday, 9th. Animal slightly brighter. Had eaten a few handfuls of grass, drank a pail of water, and nibbled a little of the morning feed of hay. Stood with flanks greatly depressed, rumen moving very slowly and without force, at intervals of one and one-half minutes, and a very slight amount of gas present. Heart action practically as observed on previous day. Animal urinated while examination was being made, and exertion accompanying the same caused a fluctuation of the pulse from 68 to 72; defecation followed closely, attended by a further rise in the pulse rate of 8, making 80, unaccompanied by any change in respiratory effort. Respiration was in the neighborhood of 22 to 24, with an occasional long drawn sigh followed by several panting motions before return to normal. Animal allowed the liberty of a small lot, but given no exercise except a short walk during the examination. Advised tempting the appetite with any morsels at hand, leave water at her disposal, avoiding all exciting conditions in her neighborhood as far as possible, and directed that two pounds Glauber's or Epsom salts be given in three

doses during the day, being very careful that she was not unnecessarily excited during the administration of the drenches. She was to be kept warmly blanketed and comfortably, though not deeply, bedded.

The kicking motion of the hind legs was attributed to a tingling sensation due to alterations in the circulation. This seemed to be verified by the fact that this symptom was more pronounced after rising. Diagnosis: Hypertrophy of the heart with dilatation, complicated by atony of the digestive tract. Sinuses examined for the purpose of ascertaining if there was any local reason for her resting her head upon objects, but these were found clear, pink and healthy, with only a little tender spot along the border of one horn core.

This animal had been receiving maximum doses of carbolic acid in feed (she being a large animal) as treatment for contagious abortion. This substance was given credit for the depressed condition of the rumen and digestive organs, consequently for the lack of appetite. In addition there was grave possibility of its having decreased the vascular tone especially of the abdominal region, which, together with the inflamed condition of the kidneys would prove amply sufficient to cause the hypertrophy of the heart. Her parturition though an easy one (the calf weighing but 80 pounds) must have had a great deal to do with the development of the existing condition of the cow, to which must be added the excitement and exertion undergone at the time of the dehorning operation.

(Sample of urine taken evening of the 9th showed upon analysis Tuesday a. m. 10th by Dr. Jodidi of the Experiment Station, to contain but a very small amount of phenol, but more than could be expected under normal conditions.)

May 10th, 11th and 12th, no apparent change in condition, except slight fluctuation in appetite for water and apparent increase in desire for bran and corn meal mashes, occasional mouthfuls of hay being taken. Green food was occasionally eaten, but it was largely thrown out of the manger. Rumen remained very torpid.

Friday, 14th. Pulse down to 62, still hard and bounding. No medication advised unless decided change for worse appeared. She drank two pails at morning feed, and seemed thankful for them, and ate about half a mash of corn meal and bran. Kicking motion of the hind legs has largely disappeared during the past few days, but may show occasionally upon rising from a long rest.

Sunday, 16th. Pulse, 64; respiration, 22; temperature, 100.8° F. Rumen seemed more active and animal seemed brighter; ate allowance of about one-half ration of bran and hay. At 6 p. m. considerably depression was reported. Found pulse 70, respiration, 24; temperature, 100.5° F. Bounding action of the heart was noticeably decreased, and the pulse seemed more nearly normal. Femoral pulse, which had been very prominent, was indistinct; limbs for the first time during the attack were cool. Issued Rx. 141 containing digitalis and alcohol, to be given three times daily until further notice.

Monday, 17th. Pulse, 68, and found to be strong; respiration, 20. Slight rations were given, and eaten well, four times during the day. Gave orders about blanketing as the weather was particularly chilly. She was allowed the run of a small lot as usually.

Saturday, 22d. During the week a very gradual though slight improvement could be noted. The use of digitalis was left off Wednesday, and was not subsequently resumed, as the pulse did not offer to go above 66 to 68, but retained a marked pounding character. Upon this date the horn began to show some irritation, and slight exuberant granulation. This was dried and dusting powder containing copper sulphate was used which seemed to take care of the morbid secretion satisfactorily.

Saturday, 29th. During the week ending with this date she was staked out upon grass and alfalfa pasture, but was not allowed to take much exercise, except in going to and from pasture, a distance of perhaps 50 yards. This seemed to have a very favorable effect upon the tone of the body and rumen, and the heart's action maintained its strength with a gradual decrease

in frequency. Pulse, 62; respiration, 17; temperature, 100.5° F., after having walked from her stall to the tethering place. Suppuration being apparent at the base of the horn, she was led slowly to the veterinary building, placed in stocks and the wounds carefully cleansed. Examination revealed the presence of small splinters of bones at the base of the horn on both sides. These had become carious and were carefully removed. It was then found that the bones concurring in forming the base of the horn had partaken of the carious process and curettement was necessary to cleanse the area. This occasioned much pain and excitement, but she stood the operation well, showing pulse of 74, respiration, 24; temperature, 101, after which she was watered and led back to pasture.

June 7th. When examined on this date, she showed much improvement in tone, appetite and apparent strength. Horns showed slight suppuration, and very small amount of exuberant granulation. This was carefully removed, dried with iodine in ether, dusted with compound alum powder, and returned to the pasture.

June 11th. Doing very well. Pulse, 60; respiration, 16; no sound of pulse perceptible over the region of the kidney; jugular pulse still present, but indistinct. Action of the heart nearly normal; action of the rumen normal; milk flow nearly normal, having again reached 44 pounds or over per day. Horns will probably make an uneventful recovery. Right horn sinus completely scabbed over and left all except a small point which was curetted and dried with iodine in ether and dusted with comp. alum. powder.

This case is of interest from several standpoints. First, she has proven a very valuable case in connection with the study of the toxic action of carbolic acid when administered internally. This substance has undoubtedly had much to do with the cause as well as the course of the disease.

Second, her case was extremely interesting for study in connection with the heart lesion from which she suffered and has

apparently recovered. The observations collected are of value in connection with that disease.

Third, and finally, she is a living demonstration of the value of constitution. Such a concomitant occurrence of symptoms would have been but poorly borne by an animal of weak constitution, if at all, and especially during the period while the rumen was so depressed. The combination of conditions has been a rather rare one; and it is altogether due to her great physical strength and endurance that treatment of her case has been attended by any gratifying results.

I am led to conclude from a careful study of these cases that there is a physiological principle involved which would tend to make it almost impossible for this class of disorder to occur in other than ruminant animals. I believe that a close examination of these cases both ante and post mortem could only lead to the conclusion that the primary effect of the carbolic acid has been exerted upon the walls of the rumen, and upon its contents. While absorption does not occur actively through the walls of the rumen, *i. e.*, it is not accomplished by virtue of the activity of any specialized cells or structures, yet anesthesia of the walls of the structure is undoubtedly produced in spite of its thick epithelial covering. This results in the partial or complete cessation of movement of this organ, depending upon the amount of surface that has been anæsthetized before dilution of the acid occurs by uniting with the food substances. The action of phenol as a local anæsthetic is generally recognized, and it has been abundantly proven that its action is exerted very accurately when it is applied to the unbroken surfaces of the body, whether they be mucous or cutaneous. Winslow in his work upon the Therapeutics of Domestic Animals, speaks of carbolic acid as having a marked anæsthetic action upon the sensory nerve endings of the stomach where under normal conditions it is combined with sulphates before being absorbed into the circulation.

The fact that phenol was found in the rumen eleven days after its last administration seems to me to prove the cause as above stated. Had the phenol been found only in the urine at

this late period, it would be necessary to consider other organs as being instrumental in retaining the poison, but they failed to show structural or functional change so far as I was privileged to examine effect on contents of rumen. The presence within the rumen of the dose usually given of carbolic acid, would not materially affect the fermentation naturally progressing in that viscus due to the action of organized ferments (bacteria), and the unorganized ferments contained in many of the food stuffs. The amount which might accumulate in from five, eight or ten days must undoubtedly have some such action. One of the most important actions of this drug in this connection is its well-known destructive activity towards the lower forms of life, being active as an antiseptic in some degree, in all its strengths. This assumption is also justified by the fact that in only one of the four cases observed did fermentation occur, and then only during the first thirty-six hours of its course, and in this case also after evacuation of the gas by use of the cannula. Among the remainder no gas formation was discernible by careful auscultation. The state of the food in the animal which died showed very plainly that no disintegration either by motion in the rumen or by fermentative changes, had occurred within several days if at all since the first serious symptoms.

That portion of the phenol which slowly escapes from the semi-paralytic rumen and reaches the third and fourth stomachs and intestine, while tending to check the action of the digestive fluids upon the foods contained, probably accomplishes its chief activity after absorption, in depressing the nervous and vasomotor supply of this region. Absorption is, of course, rapid during the early stages of its passage through the body, and for that reason it is not likely that the amount, constitution or consistency of the feces is affected unless prolonged in action by continued exhibition, or by giving in very large amounts.

CONCLUSION.

We have then in this series of cases a form of carbolic acid poisoning which differs very materially from that usually de-

scribed, including a set of symptoms which might very readily be confused with more common and less serious ailments. A few of the more characteristic symptoms only were common to the whole group; first, the depressed condition of the rumen; second, general depression of the sensorium; third, some degree of cerebral disturbance; fourth, moderate advance in pulse rate and temperature; respiration likely to be out of proportion with heart action, the latter being affected by the decreased blood pressure resulting from marked depression of the vaso-motor nervous system, possibly to a serious extent; all these and others mentioned might be expected in mycotic poisoning, impaction and several other forms of dietary disturbance. As said in the introduction, however, there is something very suggestive about these cases, and under conditions where such treatment is likely to be in use (Abortion trt. with C. A.), it is well to ascertain the amounts used and the length of time over which it has extended, also when last given. The darkening effect upon the urine was noted in a few instances, the odor did not become sufficiently marked as to be noticeable at any time, but it is altogether likely that the odor which caused the remark of the stable man before referred to, was due to the presence of the phenol in the feces. The test for its presence in the urine in any suspected cases will be conclusive and is easily conducted, requiring only a few test tubes and the proper chemicals. The instance cited shows this point very favorably and especially so since the test samples taken from three apparently normal cows did not reveal the presence of C. A. at all.

(In conclusion, I believe that it is not out of place to say that the close confinement of the cattle may have had something to do with the development of these cases. They occurred at the season of the year when from high feeding and slight exercise, the constitution and tone of the dairy animal is likely to be at low tone, viz., March, April and May.)

BOVINE TUBERCULOSIS IN IOWA HERDS.*

BY H. E. TALBOT, DES MOINES, IA.

There is scarcely a subject relating to the lower animal which has so great a bearing upon the public health, and which has occasioned so much thought, personal research, both friendly and bitter discussion, and above all, such an earnest effort toward its control, as bovine tuberculosis.

While it is one of the oldest and most dangerous diseases among cattle, there is still such a diversity of opinion among both the profession and the stock breeders, that we find it a very difficult problem to accomplish the best results with the limited means at our disposal.

There are a great many who believe that a large amount of tuberculosis exists among our cattle and swine, while others think that just the opposite is the case, so it is very important that we as veterinarians arm ourselves with all the facts at our command to be better able to thoroughly enlighten our clients upon this subject, thereby gaining not only their respect, but their hearty co-operation in our flight to stamp out and control the ravages of this disease in the lower animals of Iowa.

The cause of tuberculosis is so well known to you all, that it will be unnecessary to dwell upon that point. Practically all are agreed that it is a micro-organism, "The Tubercular Bacilli," but there seems to be some difference of opinion as to the method of infection; a large number holding that the great source of infection is through inhalation or through skin wounds or abrasions.

We believe this mode of infection is possible, but not common, the greater percentage of animals becoming infected through the digestive tract.

* Iowa Veterinary Association.

Experiments have proven that milk from a tubercular udder fed to calves has produced the disease in from one to ninety days. We also find that in Iowa the largest percentage of tubercular swine come from districts where the cattle are diseased, the infection coming through the fæces, milk or dead carcasses, as for example: A case came under our observation this summer where a cow had died from tuberculosis. The carcass was drawn into the swine pen and opened, giving the swine free access to the internal organs. The drove of swine were seventy-two in number, and were sold in about ninety days to a packing house where federal inspection was maintained. Upon being slaughtered every animal showed marked tubercular lesions and twenty-two were consigned to the tank.

Animals very rarely become diseased without coming in contact with infected ones or by eating and drinking from the same boxes or troughs. It has also been demonstrated that tubercular mothers very rarely give birth to tubercular offspring. Almost every example proves conclusively that the greatest method of infection is through the digestive tract.

While we have numerous bulletins and a world of literature at our command which places us in possession of the facts as they exist, to the end that we might still have a more abundant proof, I have compiled the results of a number of tests made by us in Iowa during the last year.

I feel that these tests will be of interest to you, not only in your effort to determine the percentage of tuberculosis as it exists in Iowa, but also to prove the reliability of the tuberculin test, as upon this test hinges the great difference of opinion; not among the members of the profession, but with the laity and the stock raisers. These opinions are many times offered through selfish motives, but many are conscientious, believing that tuberculin will produce the disease in a healthy animal, or that animals will respond to the test when suffering from other diseases or injuries. Many also believe that healthy animals will respond to the test, thereby causing great destruction of the herds through the unreliability of tuberculin.

It has been to overcome these numerous misconceptions that this report has been compiled and while these tests have extended over a number of months and have been made in various localities throughout the state, we have always exercised great care in recording them, to the end that the grand total might be an absolutely reliable report of the results obtained through the use of tuberculin during the past year.

I have taken as the foundation or unit for the purpose of this report one thousand (1,000) cattle. Among these were two three-year-old bulls, one pure-bred Short Horn and one pure-bred Holstein, both of which reacted to the test and both of which showed the disease on post mortem; the Short Horn being consigned to the tank. There were also about one-half dozen calves from six to nine months old, and from twenty to thirty steers ranging from one to two years of age, but the majority of the number was "she stuff," particularly milk cows, there being a few heifers in the bunch.

To the end that this report may be unquestionable, I have used the owner's name, address and the date of test, which is as follows:

The number tested was one thousand (1,000), the number reacting being three hundred and six (306) or thirty and three-fifths per cent. of the number tested. In explanation of the large percentage of reactors it must be remembered that sixty-one per cent. of the entire number were from suspected herds, this percentage being far in excess of the percentage of diseased animals throughout the state.

Of the three hundred and six reactors, all were slaughtered at packing establishments where federal inspection is maintained, the animals being turned over to the federal inspectors for final diagnosis and disposition.

While we witnessed the post mortem of all of these animals ourselves, we have taken their final examinations for the purpose of this report. According to the report furnished us by the United States inspectors, of the three hundred and six slaughtered, three hundred and five showed marked tubercular lesions,

proving this test to be ninety-nine and nine-tenths per cent. reliable. This showing proves the almost absolute reliability of the tuberculin test.

Of the 306 slaughtered, 76 were consigned to the tank as unfit for food, being $7\frac{3}{5}$ per cent. of the entire number tested, or $21\frac{1}{2}$ per cent. of the reactors.

This, gentlemen, is of great importance to the practitioner, as it is one of the first questions the client asks the veterinarian after he has been convinced as to the reliability of the tuberculin test. The question usually is, "If my cattle do react, what am I going to get for them?"

More especially is it advisable for us to bear in mind this percentage which goes for offal in a state like Iowa, as there has never been a dollar appropriated by our legislatures to reimburse the owners for tubercular cattle which passes for food, and in this way we are able to show the owner that he can reasonably expect to receive about 75 per cent. of the value of his cattle by shipping and having them slaughtered at packing houses, where federal inspection is maintained. This percentage which goes for offal is a conservative one upon which to base estimates to your patrons.

I am also reliably informed by the chiefs of the several packing plants in Iowa that about 75 per cent. of all tubercular animals slaughtered at the abattoirs passed for food.

Therefore after the public has been convinced as to the reliability of the tuberculin test, the next and most important step is to be able to give them reasonable assurance that their loss will not exceed 25 per cent. This estimate of course is based upon beef value, not high priced pure breeds or valuable milkers.

Of the 306 reactors slaughtered, 203 passed for food, being 29 per cent. of the number tested and $78\frac{1}{2}$ per cent. of the number slaughtered. Of the 1,000 tested, 610 were suspected cattle. What I mean by "suspected cattle" is where the disease is known to have existed on the premises.

We are able to trace a great deal of tuberculosis through reports from federal inspectors, these reports being furnished them

by the packers. The state veterinarian is then notified and upon visiting the premises and making the test we almost invariably find the stock diseased. It is these herds which are reported as "suspected," so a summary of this test would be as follows:

Number tested, 1,000; number reactors, 306, or $30\frac{3}{5}$ per cent.; number slaughtered, 306, or $30\frac{3}{5}$ per cent.; number showing tuberculosis on post mortem, 305, or $99\frac{9}{10}$ per cent. of the number slaughtered; number tanked, 76, or $21\frac{1}{2}$ per cent. of those killed; number passing for food, 230, or $78\frac{1}{2}$ per cent. of the number killed; number suspected, 610, or 610 per cent. of the number tested.

It must be borne in mind that this is not necessarily an indication of the prevalence of tuberculosis in Iowa herds, for in non-suspected herds the percentage would be considerable lower.

While this report of 1,000 animals comprises but approximately one-half of the number tested by us during 1908, this number has been sufficient to establish beyond any question of doubt the reliability of tuberculin.

I will say, however, that these cattle have all been tested with fresh government tuberculin.

While tuberculin of other makes may be just as reliable, never having used any other, I am unable to report as to its reliability.

While V. A. Moore, of Cornell University, Ithaca, N. Y., maintains there is no standard or uniformity in the preparation of tuberculin, I firmly believe that if the test is properly applied, taking into consideration the excitement of the animal, watering or feeding just prior to taking temperatures, advanced pregnancy, retained placentas, abnormal temperatures before injecting the tuberculin, etc., and that if fresh government tuberculin is used, the failures will not exceed one per cent.

According to V. A. Moore, a committee has been appointed from the laboratory section of The American Public Health Association for the purpose of formulating a standard method for the preparation of tuberculin. This committee is now at work, but has not as yet reported.

We have applied the tuberculin test to cattle suffering with actinomycosis for the purpose of determining whether a reaction could be obtained. The results were negative and upon post mortem the animals have proven to be free from tuberculosis.

We have also experimented with tuberculin upon animals known to be tubercular, for the purpose of determining how often cattle would react to the test. I will give one experiment, using the owner's name by his permission.

W. F. Parks, Indianola, Iowa. Dates, Feb. 5th and 6th, 1908. Number tested, 25, all being pure-bred Short Horns, numbers reacting, 13. Of this number 6 were immediately slaughtered the remaining 7 being allowed to remain on the premises for the purpose of saving their calves, they all being with calf. I am unable to give the exact dates of the subsequent tests, but can give them very closely. In about 90 days (May 1st) these 7 cows were retested, only 5 reacting, no attention whatever being paid to advanced pregnancy, the majority of them having calved. One animal, however, which was due to calf in about 10 days failed to react.

About sixty days later (July 1st) they were tested for the third time, at that time all having calved, when four of the seven failed to react.

About four months later (November 1st) they were tested for the fourth time, five reacting, but during these four tests there were two which failed to react after the first test.

On November 14th the seven cows were slaughtered at the Agar Packing plant in Des Moines, Iowa, and all showed advanced tuberculosis, two of the seven being consigned to the tank.

On November 11th and 12th, the seven calves from these seven cows were all tested, together with twenty more young cattle. All seven calves were non-reactors, these calves immediately after birth having been placed with healthy mothers, which had previously passed the test.

We have conducted numerous other experiments during the past season similar to the one just reported, and these experi-

ments have taught me that if ever an animal gives a positive reaction, not to try to deceive myself or to make myself believe this reaction may have been caused by some other disease than tuberculosis. I have, therefore, refused to make second tests, for by so doing I am convinced that we would often leave a number of diseased animals upon a farm, the stock-raiser therefore being very slightly benefited and his herd still subject to danger of infection from the diseased animals which failed to respond to the second test.

I believe it to be our duty as veterinarians to so notify the owner and to endeavor if possible to convince him that a subsequent test would be worse than folly, for in every instance where a second test is conducted after a positive reaction has been obtained, to a limited degree it is an admission that we ourselves are not absolutely sure as to the reliability of the tuberculin test. Our interpretation of a typical tuberculin reaction should be to diagnose it as tuberculosis without any hesitancy. It does not necessarily follow that all re-acting animals are worthless, but they should be isolated from the rest of the herd, for the reaction may take place when the lesions are very small, in fact too small to be seen. It is possible that where animals react and no evidence of the disease is found in the internal organs, or the lymphatic glands, that a more careful examination of the bones, joints or nervous system might reveal the presence of tuberculosis. As for example: A few weeks ago a three-year-old steer was slaughtered at an abattoir where United States inspection was maintained. A careful examination of the viscera was made and no tuberculosis found. An examination was then made of the spinal cord, where lesions were found, small tubercles being situated on the spinal cord in the lumber region. Our attention had been directed to the spinal column from the fact that the animal had a staggering and wobbling gait and upon pressure or a slight blow to the affected region, the animal would fall to the ground prostrated and had to be assisted before being able to rise.

However, I do believe repeated tests to be of vital importance to the non-reacting animals at any time from six to twelve months, as tuberculin will not always give a reaction during the period of incubation or where the disease has been arrested. The same is also true of advanced stages of the disease, so that the records of tested herds do not always point out all of the infected ones, as the ones recently infected or those in the advanced stages may not react until the disease becomes active. In order to eliminate the disease entirely from a herd, repeated tests are necessary.

Where tuberculosis has been known to reappear in a herd, after the reactors have been slaughtered, both the owner and the public are prone to place the blame upon the veterinarian or to question the reliability of the test; when in fact the owner himself is to blame for his failure to have them retested. It is therefore quite important that the owner be advised by his veterinarian as to the necessity of subsequent testing, thereby relieving himself of the responsibility should the disease recur.

Cattle reacting to the tuberculin test should be disposed of in the following manners: (1) Total destruction. (2) Slaughtered at abattoirs under proper inspection. (3) Isolated for breeding purposes according to the Bang method.

The veterinarian should in all cases keep a record of the animals tested, date of testing, owner's name, number reacting, and the disposition of all reactors if possible. The latter, I am aware, is sometimes impossible, or at least that has been our experience during the past season. However, we are able to say positively that there has been but one herd which has escaped us, and upon which we are unable to give the post-mortem results.

Of several thousand animals which have been tested during the past season there was no herd in which so great an amount of interest was taken as in the case of the herd referred to above. There were several reasons for this unusual interest, the first and greatest reason being that it was the most beautiful, typical dairy herd of Holsteins that it has ever been our pleasure to have tested. The cattle were owned by the state of Iowa and

were at one of the state institutions. There were 106 in all, practically all Holsteins, and of all ages. They were tested April 21st and 22d, 1908. Of this number there were 57 reactors, almost 54 per cent., and this was not considered a suspected herd.

It is a great disappointment indeed not to be able to report the post-mortem results of this particular herd, but no blame whatever can be attached to the State Veterinary Department for its failure to witness the post mortem, the parties in charge of these cattle having seen fit to dispose of them without notifying the department, after having been previously advised that it was the desire of the department to witness the post mortem on every animal which reacted. They were also advised that the federal laws prohibited the interstate shipment of diseased cattle.

I was personally notified sometime after the disposition of these cattle that they had been shipped to Omaha for slaughter, but I was not furnished with the results of the post mortem, although I made that request.

I refer to this particular discourteous incident as a warning to veterinarians that in cases where animals have reacted, the proper official should be notified in time to place a quarantine upon them. This action would insure the proper disposition of these animals, would be a safeguard to public health and would win for the veterinarian the lasting gratitude of those who are to-day waging an almost hopeless fight against this great white plague.

In conclusion let me urge upon those present that they be untiring in their efforts toward the upbuilding of our profession, remembering that as the public now looks to us for protection from this awful scourge, so may we as veterinarians never betray the trust which they have imposed, but with that disregard of self which is the only true indication of character, let us ever be found among the leaders of the fight, scorning the criticisms of the envious and looking for our reward only in the consciousness of duty well done.

Owner.	Address.	Date.	No. Test.	No. React.	No. Slaughtered.	No. Show. on F. M.	No. Tank.	No. Passed.	No. Suspd.
W. F. Parks.....	Indianola	Feb. 5, 6.....	25	13	13	13	3	10	..
F. Brown.....	Indianola	Jan. 2, 3.....	29	6	6	5	1	5	..
State of Iowa.....	Mitchellville	Mar. 4, 5.....	28	3	3	3	..	3	..
C. W. Stuart.....	Olive	Mar. 9, 10.....	30	10	10	10	3	7	30
State of Iowa.....	Clarinda	Mar. 12, 13.....	97	3	3	3	..	3	..
F. Brown.....	Indianola	Mar. 18, 19.....	42	1	1	1	1	..	42
T. Hargis.....	Des Moines.....	Mar. 21, 22.....	30	18	18	18	6	12	30
D. R. Brewer.....	Des Moines.....	Mar. 27, 28.....	2	..	..	..	..	..	..
N. E. Coffin.....	Des Moines.....	Apr. 16, 17.....	14	..	..	..	..	..	..
J. Atkinson.....	Des Moines.....	May 4, 5.....	9	2	2	2	1	1	..
J. Porter.....	Altoona	May 4, 5.....	13	..	..	..	..	..	..
C. Wilson.....	Waukee	May 22, 23.....	4	1	1	1	..	1	..
H. Polk.....	Des Moines.....	May 25, 26.....	4	..	..	..	..	..	..
L. Samson.....	Altoona	May 27, 28.....	9	2	2	2	..	2	..
M. Lewis.....	Ankeny	June 10, 11.....	3	1	1	1	1	..	3
H. Thornton.....	Ankeny	June 17, 18.....	13	..	..	..	..	..	..
V. Donelson.....	Ogden	July 6, 7.....	22	10	10	10	2	8	22
N. J. Harvey.....	Ankeny	July 7, 8.....	12	1	1	1	..	1	12
State of Iowa.....	Independence	July 21, 22.....	176	129	129	129	40	89	176
State of Iowa.....	Council Bluffs	June 24, 25.....	31	1	1	1	..	1	..
State of Iowa.....	Eldora	July 30, 31.....	63	..	..	..	..	..	..
D. L. Berry.....	Indianola	Sept. 1, 2.....	3	3	3	3	1	2	3
State of Iowa.....	Knoxville	Sept. 3, 4.....	15	..	..	..	..	..	..
G. Farrell.....	Ankeny	Sept. 21, 22.....	13	2	2	2	..	2	13
Wm. Koons.....	Des Moines.....	Sept. 25, 26.....	8	..	..	..	..	..	..
T. Speed.....	Pleasantville	Sept. 28, 29.....	4	..	..	..	..	..	..
W. Wilcox.....	Marshalltown	Oct. 2, 3.....	32	25	25	25	3	22	32
State of Iowa.....	Mt. Pleasant.....	Nov. 5, 6.....	195	73	73	73	14	59	195
D. L. Berry.....	Indianola	Nov. 24, 25.....	25	1	1	1	..	1	25
H. Dorman.....	Madrid	Dec. 8, 9.....	16	..	..	..	..	..	..
W. F. Parks.....	Indianola	Dec. 11, 12.....	27	1	1	1	..	1	27
Wm. Deter.....	Avoca	Dec. 22, 23.....	6	..	..	..	..	..	..
			1,000	306	306	305	76	230	610

A CONTRIBUTION TO BEHRING'S BOVOVACCINATION.*

BY W. EBELING, TRANSLATED BY DR. WILFRED LELLMANN, V.S., NEW YORK CITY.

Our knowledge of the nature of tuberculosis, especially of its pathogenesis, has been materially enriched by the valuable pioneer-work of von Behring, covering a period of years. He realized that the cardinal source of this disease is infantile infection occurring in most cases during the first days of life. The infection appears to be mostly alimentary, the tuberculosis virus being conveyed in the food, and especially in the milk infected with tubercle bacilli, into the alimentary canal, and hence, because of the protoplasmatic nature of the intestinal membrane which in the first days of life partly lacks the protective layer of epithelium, to the lymph ducts, whence it may find its way, either through the lymph or through the blood, into all the organs of the animal-body, causing tubercular lesions. The source of the tuberculosis virus is not limited to the milk-gland of the mother or wet-nurse, but the bacilli may get into the milk before it is fed to the young individual, or they may be washed down with milk originally free from tuberculosis from parts of the mouth infected with tuberculosis poison by contact or inhaled with the air. This view, when it was first published and up to the present time, has met with violent opposition based particularly on the claim that especially in tuberculous changes of the lungs it has been proven clinically and by post-mortem examinations in human beings, as well as in bovines, that the air inhaled into the lungs must be considered the carriers of the infection-material, and that tuberculosis of the lungs must be designated as the primary form of the disease. This interpreta-

*Reprint from Med. Krit. Blatter, Vol. I.

tion was further supported by the doctrine of the predisposition of single individuals to tuberculosis, who, tainted from birth, are liable to have acquired a certain degree of susceptibility to tuberculosis which would cause them, if in unfavorable hygienic surroundings, or consequent upon physical excess, to succumb to this disease. In contrast to these views, Behring considers the various tuberculous affections in later life, especially the tissue destruction characteristic of human pulmonary tuberculosis, as the result of extensive and long-enduring changes in the organism caused by infection at infant age. The tubercle bacilli taken up at this age, and believed to remain latent in the organism, from which condition they are aroused under the influence of later occurring, mostly acute, so-called accidental diseases, are supposed to acquire the ability of causing general infection or auto-infection.

The careful observer finds this doctrine of the infantile alimentary infection substantiated in numerous instances in veterinary practice; so that this form of infection as the cause of tuberculosis dissemination among the farm animals, especially cattle and swine, must be designated as the most important under present agricultural conditions.

In former times, when agriculture was practised more extensively, the farm animals, especially cattle and swine, had at their disposal large pastures every year, in which, during the summer months, they were allowed to lead natural and therefore healthful ways of life. During the warmer seasons, these animals were kept in the open air continuously and were stabled only during the winter months, to be fed healthful home products. Besides, the but small crop of grain and beets did not permit the keeping of a large number of animals, because their maintenance would have been difficult, and for this reason, there was but limited opportunity to contract tuberculosis by contact infection even during the stabling period, and it is not astonishing that in former times tuberculosis occurred only sporadically in a herd.

These conditions underwent a change when the more intense practice of agriculture was begun. Because of the greater areas

used for grain and vegetable cultivation, the pastures were cut down and the animals kept on them, but for a short time during the year; but in most cases they were stabled all the year through. They were over-nourished with artificial feeds, in order to yield a larger amount of milk or meat. They were considered mere milk and manure machines whose health was often disregarded, and the natural consequence was a weakening of their constitution, because this over-production was obtained while the animals were constantly kept in the stable, and, in most cases, under poor hygienic conditions. Besides, with the increase of trade in general, the trade in cattle especially grew larger, and with the import of foreign breed animals, tuberculosis was frequently introduced into previously healthy herds. But in spite of these disadvantages, with the timely realization of the danger the further dissemination of tuberculosis among the farm animals could have been limited, if it had not been for the circumstance which must be considered the main cause of tuberculosis dissemination, viz., the establishment of dairy depots. In former times, the milk supply of the separate farms was disposed of by them independently, and the excess was fed to the farm animals. In most cases, no danger was connected with this mode of procedure. Since the dairy depots came into existence, the entire milk from a certain agricultural district is brought together and mixed before it is disposed of, and the excess of this mixture is returned to the members of the combination. Now, tuberculosis of the udder in milch-cows is one of the main factors in the dissemination of the disease; on the one hand, because this form of tuberculosis is not easily detected by the owner or milker, and the change that has taken place in the milk of such cows is not perceptible to the layman. On the other hand, because with this form of tuberculosis and the enormous production of tubercle bacilli, the infecting material gets into the milk and at the dairy depot will infect the entire supply, especially the skim-milk. Through the feeding of such skim-milk to young stock, especially calves and pigs, as is customary, artificial dissemination of tuber-

culosis was unwittingly caused on an enormous scale, especially wherever the skim-milk was fed unsterilized.

There is no more fitting proof for this fact than the increase of tuberculosis among the pigs of large dairy concerns, where for the utilization of the excessive milk large numbers of pigs are kept. In such places the increase of tuberculosis is making rapid headway, and small wonder, if we consider that according to statistics, one case of udder tuberculosis is to be found, in the larger herds, in every hundred milch-cows. A dairy that at an average disposes of the milk of about 1,000 milch-cows daily, therefore receives milk from at least 10 cows with udder tuberculosis, a quantity sufficient to thoroughly infect the entire milk, and therefore to increase the dissemination of tuberculosis among the young stock, in the form of feeding tuberculosis. Another proof that the dairy depots are the main source of infection, is the fact that according to the findings of the meat inspectors at the larger slaughtering places in Prussia, the number of animals condemned as tuberculous have increased materially since the last two decades of the past century, the time within which the establishment of the greater number of dairy depots occurred. While according to the examinations of the Imperial Board of Health during the years 1888-1892, 8 per cent. of all bovines in the German Empire were found to be tuberculous, the results of examinations at the large abattoirs of Prussia in the year 1895 already showed 15 per cent.; in 1896, 14 per cent.; in 1897, 15.8 per cent.; in 1900, 17 per cent. of all slaughtered cattle tuberculous; and according to the results of the law on beef-cattle and meat-inspection in the German Empire, there were found in the year 1906, 23.5 per cent. of all beef-cattle tubercularly infected.

This fact compelled those in authority to look for means for the elimination of this calamity. Therefore the methods of Bang and Ostertag were resorted to, the latter of which has so far found the greater number of supporters and offers the best prospects of success. But the very fact discussed just now at the same time serves as proof of the correctness of the views ad-

vanced by von Behring in his writings on the cause of tuberculosis, viz., that the milk fed to the young individuals must be considered the main source of tuberculous diseases. For without the opportunity of an infantile infection by way of the alimentary canal, with infected skim-milk, obtained from dairy depots, the dissemination of tuberculosis among the farm animals would not have gained the extent within the short period of two decades, as has indeed been the case.

The whole world was interested, when the discoverer of diphtheria antitoxin and of the sero-therapeutic method in his lecture at Stockholm in 1901 stated his intention to shortly make known a method for the suppression of bovine tuberculosis on basis of his phthisiogenetic researches, by which it would be possible to artificially immunize cattle against tuberculosis infection. As is well known, this method, analogous to Jenner's smallpox vaccination, consists in the artificial injection of attenuated tubercle bacilli of human origin into the circulation of cattle, for the purpose of isopathic immunization, and was named "Bovovaccination" by von Behring.

According to this method I have vaccinated during the period from March 11, 1903, to March 21, 1908, 4.621 calves of 37 different herds, after I had in the years 1903-1905 thoroughly studied the methods at the Marburg Institute for Experimental Therapy, and also later remained in touch with the directors of this institute for the purpose of exchanging views regarding the experience gained.

A special record was kept for each bovovaccinated animal. The calves were supplied with an earmark bearing a consecutive number and an appropriate mark, so that each animal could be accurately identified even after years. With the exception of three animals that soon after vaccination died of acute lung oedema, the young calves have stood the vaccination well and developed into fine animals, to the great satisfaction of the owners. However, in the beginning of 1908, septic pneumonia was prevalent among the young stock of this region to quite an extent, which, as a matter of course, prohibited the vaccination of the diseased

animals, but which also caused us to be careful with the apparently healthy calves, because in many cases they were suffering from the latent form of pneumonia which, after the injection of tubercle bacilli into the circulation, was converted into the acute form and killed the animals. Therefore, the immunizations were postponed, and, because of the unfavorable results obtained later on in consequence of the epidemiological dissemination of infectious pneumonia, had to be discontinued entirely for the time being.

In spite of this, the experiments prove clearly to-day the value of the bovoc vaccination. At the inauguration of this method, writers on the subject called attention to the fact that a conclusive opinion regarding it could be expected only after a lapse of years, when the results of the systematic use of the method in a greater number of herds could be submitted for examination. Therefore, my tests cannot be considered a conclusive proof because of the relatively short time elapsed since the introduction of the method—that will perhaps require decades—but they will be of some value as compared with the single experiments in clinical institutions, inasmuch as my experiments were carried on under natural agricultural conditions, and under the observation of the necessary hygienic measures. These sanitary precautions are absolutely required for the correct valuation of bovoc vaccination, since all artificially produced immunity is but relative and never absolute, as von Behring has repeatedly emphasized in his writings. This immunity can be lost through unhygienic conditions and frequent opportunity for mass-infection with tubercle bacilli, just as in civilized countries, where smallpox epidemics have been routed by the introduction of vaccination, single individuals still contract the disease, as soon as they have been exposed to infection in a large measure. Therefore, it should not be astonishing, if young calves under certain conditions contract tuberculosis in spite of bovoc vaccination, namely, if they are kept under conditions which exclude even the slightest sanitary precautions and which are conducive to tuberculosis infection. For this reason, I cannot consider successful all those

experiments, in which the young individuals have been intentionally and repeatedly exposed to severe infection by highly virulent tubercle bacilli, because the acquired relative immunity could not withstand this severe infection, and the results of necessity had to be unfavorable.

The opinions of cattle owners whose herds have been systematically immunized by me for a period of six years have been especially valuable to me in drawing a conclusion as to the importance of bovovaccination; because these owners saw the vaccinated animals daily and because of the vaccination paid particular attention to them, and with the records they could determine accurately, whether there was an improvement in the condition of the herd since the adoption of bovovaccination, or not. And I may state here summarily, that all owners, when examining the material from an objective point of view, were convinced that their herds had improved in health since the introduction of the method. The losses by deaths and by inferior returns caused by tuberculosis have obviously decreased, while the material gain has increased considerably. The fact alone, that 37 cattle owners are having their young stock systematically bovovaccinated, must be considered a success for the method, inasmuch as it would never have been adopted so generally in a relatively limited agricultural district, if it did not afford evident and generally acknowledged advantages.

Mr. v. S. in C. recently stated upon my inquiries, that his herd is in so excellent a condition since the adoption of bovovaccination, as never before, and that in recent years he has had no losses from tuberculosis. He attributes this success to bovovaccination and requested its continuation as soon as the septic pneumonia epidemic had run its course.

In the herd of Count v. S. in L., 10 per cent. of the adult cattle succumbed to tuberculosis or had become useless, in former years. The virulence of the tubercle bacilli in this herd was especially high, as von Behring himself had determined by an examination of animals which I had sent him to Marburg. Since the adoption of bovovaccination, the number of diseased animals

decreased visibly, and within the last two years, I have not known of a decided case of tuberculosis there. On the estate G, there reacted in 1903, prior to vaccination, 87 per cent. of the adult cattle, and 100 per cent. of the cattle below two years of age, upon the subcutaneous injection of tuberculin. In 1904, 24 per cent. of the bovovaccinated cattle up to one year of age showed a rise of temperature, and in 1905 only 18 per cent. In 1906, of all animals bovovaccinated up to that time, a total of 216 head, only 21 per cent. showed a fever reaction. Of the animals bovovaccinated by me, 61 head were dissected after having been slaughtered, in most cases purposely, or consequent upon accidents and other diseases. Of these, 58 head were free from tuberculosis, although all lymphatics were examined *lege artis*, and 3 animals were tuberculous. No. 1 had tuberculous nodules in a bronchial and in a mediastinal gland, but was otherwise free from tubercular lesions. Nos. 2 and 3 had come from the herd of the before-mentioned estate L; No. 2 was found to have miliary tuberculosis of the brain with severe symptoms of paralysis *intra vitam*, and No. 3 had tuberculosis of the first vertebra of the neck, disseminated tuberculosis of the lungs and their glands, tuberculosis of the serous membranes, of the liver and of the spleen. These 61 animals, when examined, were from four months to five years of age, and had been vaccinated in the years 1904 to 1909, at a time when in the German Empire the percentage of cattle found to be tuberculous at the meat inspection, was 20 per cent., while in my case only 5 per cent. were found tuberculous. This decrease of tuberculosis in my vaccinated cattle as compared with the state of health of not vaccinated animals in the German Empire, I must attribute especially to the effects of bovovaccination; for there exist no other reasons that could be held to account for these favorable results. These animals, without exception, had come from the herds of large owners, in which, as is known from experience, tuberculosis is more frequent on account of the more numerous opportunities for infection offered by the greater number of animals. In the raising of these cattle, only the absolutely necessary sanitary pre-

cautions had been observed, inasmuch as the young calves had been nursed by their dam up to their sixth week, and later on, besides some prepared food and meadow hay, they had received skim milk which was supposed to have been sterilized before delivery by the dairy, but which according to my observations had not been sterilized, since it turned sour, during the warm season, on account of the imperfect construction of the apparatus. Precautions were taken to avoid contact of the young calves with tuberculosis-suspected, older animals, but up to the completion of their first year, they remained in the same stable with the older milch-cows, to be removed later on, and with the completion of their second year, to be put with the main herd. Under these conditions, they were not wholly protected from the danger of infection, because among the older inhabitants of the stable there were a number of animals that had not been bovovaccinated and which must be considered carriers of tubercle bacilli and no doubt could disseminate tuberculosis virus. But bovovaccination, by developing relative immunity, had produced such a degree of resistance to slighter infections in the vaccinated calves, that they were able to withstand them, on account of the formation of specific anti-bodies.

Only where severe infection occurred, the protective wall of immunity was broken and tuberculous lesions were formed. As belonging to this class, we may safely consider all those animals which on dissection were found tubercular and which had reacted upon the tuberculin test, unless we consider a number of them as having been already infected, either intra-uterine or extra-uterine, prior to the development of artificial immunity.

According to my experiences, von Behring's bovovaccination has fully made good the expectations placed in it. The non-occurrence of a single case of tuberculosis in the bovovaccinated animals, is a demand which, on basis of the described conditions, it is impossible to comply with at the present time, on account of the enormous dissemination of the epidemic and therefore frequent opportunity for infection.

If the most prolific source of infection is closed up, if after the adoption of the new law on animal epidemics, of May 18, 1909, all animals with open tuberculosis are eliminated, then the success of bovo Vaccination will be excellent and von Behring's work in this field will receive just approval. I therefore feel justified in agreeing with Much when he states: "Since the possibility, that man can be infected by the bovine, has been proved, a rational method of suppressing bovine tuberculosis constitutes an important weapon in the battle against human tuberculosis, and therefore the discovery of this protective vaccination, whatever may be the general opinion of its results just at the present time, must be considered a great achievement."

How we are justified to view these results on the basis of extensive experiments, I have in the foregoing tried to demonstrate.

THE CAPSULE FOR SHY BREEDERS.—There is considerable interest in the discussion that is going on in breeding circles relative to the capsule and its efficacy in breeding mares that are doubtful. Three years ago we purchased Winnie Colbert, a beautifully bred mare whose dam is Minnie Colbert, expressly for a brood mare. We bred her continuously all of that season to an extra good horse, but failed to get her in foal. The next year we bred her through the entire season to Mr. Grattan's Lodaller. Lodaller is one of the surest horses in the country and with Mr. Grattan's well-known ability to handle both mare and horse we felt sure of success. But again we were disappointed and offered the mare for sale.

Mr. Grattan advised me to try her again, offering to put his time and horse against my time and the mare. I accordingly bred her once last year. Mr. Grattan followed the service immediately with the capsule. The mare never came in season again, never took the horse again, and I have a fine colt, an exact picture of Lodaller. I have unlimited faith in the use of the capsule. When we take into consideration its simplicity it seems the proper thing to use. Besides it saves the owner a lot of extra time and bother, and the mare a lot of extra worry.—J. C. Mills, Fillmore, Minn., in *Breeder's Gazette*.

DIAGNOSIS OF RABIES.*

BY WARD GILTNER, D. V. M. (CORNELL), AUBURN, ALA.

In *Lippincott's Magazine* for August, 1884, Albert Leffingwell, M.D., has the following to say on vivisection: "Pasteur, we are told, has claimed the discovery of a cure for hydrophobia through experiments on animals. It will be well worth its cost in agony if true, but we cannot forget that its practical value yet remains to be demonstrated. Aside from this has physiological experimentation during the last quarter of a century contributed such marked improvements in therapeutic methods that we find certain and tangible evidence thereof in diminishing fatality in any disease? Can one mention a single malady which thirty years ago resisted every remedial effort, to which the more enlightened science of to-day can offer hopes of recovery?"

I sincerely hope that the tender hearted anti-vivisectionist is still living, and that he has enjoyed a quarter century of scientific medical research that has been more fruitful than the one to which he alludes. I doubt not that the generation which ended at the time Pasteur made his wonderful discovery, gave the world little tangible evidence of the value and necessity of animal experimentation; but, to-day, the knowledge of what experimental medicine has done for the prevention and cure of disease is common property of the medical profession and the newspaper-reading laity. It is true that this has nearly all come to pass within the last twenty-five years, but the results of scientific research in this period have been attained only by the efforts of men trained many years back.

The Pasteur Institute in this city is concrete proof of the value of the great French scientist's animal experimentation. I

* This article was written in 1907. We shall be glad to publish any later views of its author in a subsequent issue of the REVIEW.

believe that any conceivable torture of the lower animals is justifiable in the sight of both God and man if thereby the life of a single human being can be prolonged or saved. On the other hand any discovery which tends to relieve the dumb brute of suffering at the hands of medical science is to be hailed with delight. The diagnosis of rabies has undergone an evolution which admirably illustrates the ideas just expressed.

The very existence of such a disease as rabies has been and is to this day doubted by members of both the profession and the laity. Historical and medical records give undoubted evidence of its existence four centuries B. C. Aristotle doubted its infectiousness to man while admitting its deadly character. In all other animals bitten, Homer tried to involve the dog star or Orion's dog in the malignancy of the disease, hence the idea that it is more prevalent in summer than in other seasons. Pliny conceived the idea of a small worm in the dog's tongue, hence the practice of worming. Up to 1804 the diagnosis of rabies must have been purely empirical or at most clinical which is at best rather ticklish business to say nothing of being unsatisfactory. Every veterinarian is familiar with the suspicious-looking dog with a still more suspicious history and a "bone in his throat" that none but the boldest care to remove. Zinke, in 1804, probably made the first effort to establish the infectiousness of the disease by animal inoculation. He produced rabies in dogs and rabbits by inoculating rabid dog's saliva into superficial wounds. Since then enough animals and human beings, too, for that matter, have been inoculated to convince the most skeptical that a rabid animal's saliva contains the virus that will reproduce the disease if introduced into the tissues of another warm-blooded animal.

Although the virus is undoubtedly in the saliva, it has never been separated or isolated from all other contaminating material. The isolation of the etiological factor of an infectious disease is of fundamental importance from every viewpoint in the study of the disease. Next to isolating and studying the bac-

terium, protozoon, or other causative agents in a given disease, the discovery of where it is, in what tissues it exists, and something about its size, virulence, and resistance to thermal and chemical disinfectants, is of great importance. While it is doubtful if anyone has ever seen the organism that causes rabies and knew it to be such, still we do know enough about the properties of the virus to work with it intelligently.

In 1881 Pasteur showed that the brain was always affected and could be inoculated into the surface of the brain of a healthy animal and produce the disease. For this purpose rabbits were and are even to this day used, though to a less degree by far. This method is familiar to both veterinarians and physicians, and requires, in addition to the rabbit and instruments, a knowledge of both bacteriology and surgery. The operation being done under the influence of ether, the animal suffers little and later seems to experience no discomfort until the period of incubation has passed. This entails the necessity of waiting at least two to six weeks, during which time the person bitten has an equal chance of developing the disease. With this method moreover the introduction of putrid material often brings about the death of the test animal before the development of rabies.

Babes reasoned "that this disease, so clearly characterized by a train of symptoms, constant in their character, ought to present characteristic lesions in the nervous centers, and especially in the ganglia of the nerves which preside over the symptoms." This hypothesis resulted in the discovery by van Gehuchten, of certain changes in the plexiform ganglion determinable by histological methods. This ganglion is situated just outside the foramen lacerum basis cranii on the vagus nerve. The histological procedure adopted by Moore and Way of the N. Y. S. V. C. is as follows: "As soon as the ganglion is removed, it is placed in Flemming's fluid for a few hours, washed in water, carried through alcohols and sectioned by the paraffin method. With this method of fixation it is almost imperative that the sections be stained with iron or Delafield's hematoxylin, of which we have found the latter the most convenient." Other fixatives have been

used, admitting of other staining reagents. The ganglion of a normal animal is composed of a fibrous capsule that sends into the interior, supporting fibers for the nerve cells, each of which is enclosed in an endothelial capsule. The changes in the ganglion of a rabid animal consist in the atrophy, and the invasion and destruction of the ganglion cells, as a result of new formed cells evidently from the endothelial capsule. This method is at the disposal of only an expert in histological technique who has at his command a well equipped laboratory and, while it saves the life and suffering of a rabbit, it is available only in cases where the disease has run its full course; this latter restriction is sufficient to make it a very unsatisfactory diagnostic measure for routine work.

Negri, who was one of the first to use this method, must have thought that a better and an easier was possible; for even the dissecting out of the plexiform ganglion is a less desirable operation than that adopted by Negri later. Any method for diagnosing rabies should answer the following requirements: Infallible at any stage of the disease, requiring simple technique and covering the shortest period of time, sufficiently vivid in its manifestations that it be available by any one with a good pathological training. I believe we have such a method at our command.

The finding of the Negri bodies is at present the object of diagnosticians when dealing with a suspected case of rabies. It is not to be supposed that everything has been learned about the Negri bodies and the pathology of the disease. On the contrary it is desirable that every case of rabies be studied carefully and the notes recorded and made public so that the results may be compared and statistics made more valuable. A few cases have recently been studied at the laboratories in the Veterinary Department of the A. P. I. The brain is removed in the usual manner as soon as possible after death. When an animal is to be killed care should be taken not to injure the cranium; and experience has taught me to ask that the head be brought to the laboratory rather than the brain. In one instance when a

gentleman was asked to bring the brain of a hog that had died with symptoms of rabies, a mess resembling scrambled eggs was cautiously conducted into the laboratory in a spacious shoe box, and to the great horror of the owner of the lost animal, I sorted out what appeared to be a piece of cerebrum with my bare hands. Right here I would like to remark that the questions that a farmer can ask about infectious diseases would put a small boy to shame and puts a young veterinarian in a position where he has to say "I don't know" frequently or tell some pretty big lies.

Experiments have shown that the Negri bodies are most constantly present in the cells of Ammon's horn (*hippocampus major*). To get sections of this part of the brain, make an incision a little to one side and parallel to the longitudinal fissure of the cerebrum, thus laying open the lateral ventricle. The *hippocampus major* lies in the posterior part of the floor of the ventricle. Small pieces are excised by cutting at right angles to the length of the horn and placed in Zenker's fluid for 12 to 24 hours, in running water, 67, 82 and 95 per cent. alcohols, and cedar oil, each, for an equal length of time. By placing the tissues in the incubator and maintaining a higher temperature, these periods may be cut down to four to six hours each. The sections are then infiltrated with paraffin for 12 to 24 hours and imbedded. Sections about 9 microns thick are fixed to slides with albumen fixative and after a few hours in the incubator are ready to stain. The following procedure is adopted: Chloroform, 3-5 min.; xylol, two changes, 5 min.; 95 per cent. alcohol, three changes; iodine alcohol, 5-8 min.; 95 per cent. alcohol to remove iodine; sat. alcoholic solution eosin 15-30 min.; wash in water; Loeffler's alk. meth. blue, 5 min., wash in water, differentiate in 95 per cent. alcohol; carbol-xylol, 3 min.; xylol, 3-5 min., mount in Canada balsam. A different staining method suggested by Frothingham (*Jour. Med. Res.*, vol. XIV., No. 3) consists in using Unna's alk. meth. blue stain and 5 per cent. aqueous eosin, equal parts for 15-30 min., wash in water, Unna's stain 3 to 5 min., and proceed as above, gives very good results.

The Negri bodies are found in the cell body of the cells of Ammon's horn and vary in size from minute dots to round or oval bodies, sometimes as large as 27 microns in diameter. They stain distinctly with eosin while the nucleus of the cell takes the blue stain and within it can be seen the nucleolus. By using Unna's blue stain a sharper differentiation between the Negri bodies and the structures of the cell can be secured than by the alcoholic eosin and meth. blue. At least a dozen slides should be stained and examined in every case. I have made a practice of using a 2-inch ocular and a 1/16 inch oil immersion objective B. & L. and I try to find the cell, nucleus, nucleolus, and then the Negri bodies or "cell inclusions." The finding of the Negri bodies is sufficient to condemn the animal; failure to find them brings up a question which has yet to be answered.

For about a year and a half attempts have been made to simplify the technique and hasten the operation by making smears from the Ammon's horn. This method has been successful in the hands of P. B. Hadley, of Brown University; Dr. Anna W. Williams, of New York City, and C. Way, of Cornell. The method employed by Dr. J. N. Brawner, of the Pasteur Institute at Atlanta, Ga., appeals to me as being the most satisfactory. This consists in removing a piece of the dark cellular layer of Ammon's horn with a platinum loop and gently drawing it over the surface of a cover-glass so that the cells are evenly distributed and subjected to no unnecessary crushing or distortion. The smears are then fixed with heat or methyl alcohol and stained as in case of sections or with fuchsin instead of eosin and mounted in balsam. The method requires considerable practice for its successful application, but a diagnosis can be made in 30 minutes.

LOUISIANA BULLETIN No. 122, JULY, 1910, is devoted to the consideration of rough rice as feed for horses and mules, from the pen of W. H. Dalrymple, M.R.C.V.S., and is a valuable contribution to the literature on dietetics; showing this cereal to be economical and beneficial as a foodstuff.

CEREBRO-SPINAL MENINGITIS.*

BY H. J. MILKS, D. V. M. (CORNELL), OWEGO, N. Y.

During the fall of 1906 and the spring of 1907, the writer had an opportunity to study Cerebro-spinal Meningitis in Louisiana. It was known as Staggers, Sleepy Staggers, Bottom Sickness, etc.

OCCURRENCE.—The disease was not confined to any particular locality. It occurred in the lowlands and in the hill and bluff districts. It attacked animals of all ages and, I believe, horses more than mules. The outbreak extended over a large area, but did not attack many animals at the same place, although one owner lost all his horses (3) in the course of three or four days. Animals were attacked at rather widely separated places. I have seen it upon both sides of a bayou, extending several miles. It was not confined to animals fed on any particular food-stuff, though the majority were allowed to graze.

CAUSE.—Numerous theories have been advanced as to the cause of this disease. It has been attributed to grazing upon low marshy lands, hence the name Bottom Sickness. The cause has also been laid to mouldy corn or fodder, poisonous plants, exposure to sun, impure water, etc. Mayo, reporting a similar disease, concluded it due to a fungus (*Aspurgillus Glaucus*). He has also recovered this fungus from the different organs. Chester, of the Delaware Station, carried on a series of feeding experiments with negative results. Some have even pointed out the infectious nature of the disease.

In Louisiana, the disease attacked animals upon such a varied diet that it is hard to connect it with any particular food. As will be seen later from the case reports, the disease attacked ani-

* Presented at meeting of N. Y. S. V. M. S., Ithaca, 1909.

mals fed upon hay and oats, hay and corn, oats and grass, corn and grass and grass alone. To be sure, many of the animals alleged to have had no grass, probably have had it to a limited extent.

To my mind, it can hardly be attributed to toxic plants or a greater number of animals kept under exactly similar conditions would have taken the disease instead of such widely separated cases. This also applied to the theory of infection, as it seems that a greater number of animals would have been affected.

SYMPTOMS.—In the mild cases we got dullness, hanging of the head, paresis or slight loss of control over one or more limbs, slight rise of temperature, 102° to 103° F., and often difficulty in swallowing. The visible mucosæ were congested and brownish yellow. In these mild cases the weakness never became so great that the animal could not stand, and usually it was able to take some nourishment and water.

The more severe cases were manifested by the same general symptoms often, however, the respirations were much increased and labored. The temperature ran 104° to 105° F. The pulse might remain practically normal or be accelerated and hard. Opisthotonus was not marked nor often present. These cases became rapidly weaker, often partially blind, stood with all legs in a bracing attitude, and sometimes sought support against the side of the stall or fence. Sometimes they were delirious and would stand with head pressed against the wall or turn in a circle, always in the same direction. Frequently in their delirium they would walk through fences and over other obstacles. There was sometimes heat in the region of the pole and coldness of the extremities. Usually the severe cases were unable to stand after twelve to thirty-six hours, and fell unable to rise again. They then died in delirium in a few hours or lay in a comatose condition for from twelve to twenty-four hours. In the delirious cases the temperature usually kept up pretty well, respirations and pulse were also much accelerated, while in the comatose condition the pulse returned to about normal, temperature nor-

mal or even subnormal, and respirations as though the animal was in deep sleep.

As the disease progressed, we occasionally got a fetid discharge from the nose and mouth, due no doubt to decomposition of the secretions retained in those parts.

In the severe cases the animals usually refused food, but showed a desire for water, though unable to drink. The digestive tract was almost completely paralyzed. Purgatives seemed to do little good no matter what the dose. The hypodermic use of eserine or arecolene did not produce purgation, but did exhibit other physiological phenomena.

COURSE AND MORTALITY.—The disease generally runs a rapidly fatal course, lasting from a few hours to four or five days, usually not more than three or four days. The time given by some authorities, eight to twelve days, is entirely too long except in those cases that survive.

In those cases that survived, the disease attacked slowly, the animal usually taking some nourishment and showing all the symptoms of a mild attack.

The mortality was 90 per cent. or more. Treatment availed little, unless started in the first few hours of the disease, and even then prognosis was unfavorable.

In our investigations the post mortem lesions were based upon five cases. In all cases the blood vessels of the brain and meninges showed congestion. Otherwise the brain substance and cord appeared normal. Cross sections of the brain and medulla showed much echymosis and extravasation of blood. In some cases there was much fluid beneath the dura; in others only a slight amount. No softening or other macroscopic lesion could be detected.

The blood was usually dark and did not clot readily. Heart was usually normal but frequently contained ante-mortem clots. The lungs were normal. The digestive tract was apparently normal except that the posterior end usually contained much dry fecal matter. In one case there was marked congestion of the last fourteen to sixteen feet of the small intestine. In another

there was slight congestion. However, this condition did not show from the exterior and may have been overlooked in other cases.

The liver usually contained much blood, spleen normal in size and appearance and might contain much blood or be very dry. The kidneys showed slight congestion, but were otherwise normal in appearance. The bladder usually contained apparently normal urine. Microscopic examinations were made of the brains and kidneys of two horses and the liver, spleen and intestines of one. Briefly stated there was shrinkage of the cells of the nervous tissue of the brain and inflammation, especially around the blood vessels. The blood vessels also contained much blood. The kidneys and liver showed some granular degeneration and congestion. In one case the blood vessels of the kidneys showed a condition similar to those of the brain. The spleen appeared normal, except for the large number of white blood cells.

A description of a few cases will be given in order that a better picture of the disease may be obtained.

CASE 1.—Mare in the first stages of the disease was slightly blind and so weak that she would stagger if moved. Temperature 104° F. Respirations and pulse much accelerated. She was still able to eat and drink. This was eight o'clock in the evening; the following morning she was down, unable to rise, but continually struggled to do so. Was unable to stand when assisted to her feet, quite blind and delirious. Temperature, 100° F. Respirations and pulse slightly accelerated. Visible mucosæ anæmic.

CASE 2.—A large mare, in good condition, was attacked Tuesday morning. In the evening was given a purge with no appreciable results. On Wednesday she fell and was unable to rise. Thursday night I saw her a few minutes before she died. At this time the pulse was very rapid, respirations labored, and temperature subnormal. This animal was used in a livery and was first noticed ill as above stated. The first symptoms were drowsiness, weakness, and persistent turning in one direction. She grew rapidly weak and fell as above stated. Her food had been

timothy hay and oats, both of which had been shipped in from the northern states.

CASE 3.—Gray mare in fair condition, was taken ten o'clock Thursday night. The following morning her temperature was 104.8° F. Pulse and respirations slightly accelerated. Very weak and stupid. Ice had been applied to the poll and back during the morning. She grew rapidly worse and was unable to stand after a few hours. An aloes purge was given, but no action from the bowels was obtained. She died Saturday morning. Feed—Corn and grass. The corn was native grown and from the same crib from which she had been fed all winter and spring.

CASE 4.—This was a young high-strung saddle horse. Was used one half day Monday and seemed perfectly well. The following day at noon was noticed sleepy and drowsy, though he had been playing in the stable during the forenoon. He was then given a pint of raw oil, and kept quiet until a local veterinarian was called Thursday morning. At this time the temperature was 105° F. Ice was used upon spine and head until he fell Friday at three in the afternoon, after being sick sixty-three hours. However, after resting a few hours he was able to get up, but soon fell and was then unable to rise again. At this time his temperature was 104° , pulse 58, respiration 36. His temperature was never less than 104° , often as high as 106° , and just before he died it reached 108° . Respirations 72, pulse impossible to count. This animal was sick four days and fourteen hours, never seemed to lose consciousness and seemed to suffer most of the time.

BACTERIOLOGICAL INVESTIGATIONS.—Cultures were made from the different organs of several animals, but with the exception of one case in which there was evident contamination, no growth took place. Smear preparations were also made from the different organs, but nothing definite could be determined.

INOCULATIONS.—In all, nine animals were inoculated, four rabbits, four guinea pigs and one horse. The animals were all adults and the inoculations made subcutaneously. The inoculating material was defibrinated blood, citrated blood, and brain

emulsion. In some cases the material was taken to the laboratory and used, in others the experimental animals were carried to the place of autopsy and there inoculated. Negative results were obtained from all inoculations.

CONCLUSIONS.—(1) The cause of the disease or its infectious nature has not been determined by these investigations. No micro-organism was encountered that could account for the disease.

If we accept the statements of the different owners, regarding the character of the materials consumed by the animals as absolutely accurate, then the theory of food contamination does not seem to hold good for the following reasons:

(a) The low per cent. of animals attacked under exactly similar conditions.

(b) The widely separated cases.

(c) The fact that the animals attacked were not confined to any particular feed or combination of feeds.

(2) The pathological findings pointed out changes in the blood vessels of the brain and meninges. Degeneration and some other changes were present in some of the internal organs. Just how much of these changes were due to the disease and how much to post mortem changes is hard to say. In that climate post-mortem changes take place so rapidly that it is difficult to get suitable material for study.

NOTE—I have purposely omitted many of the details in this paper. For those who desire a complete account of the investigation, I refer to Bulletin No. 106 La. State University Experiment Station, Baton Rouge, La.

HORSE SHOWS IN 1910.

Warrenton, Va., August 31-September 1.	Bryn Mawr, Pa., September 28-30.
Newport, R. I., September 3-6.	Brockton, Mass., October 4-7.
Rutland, Vt., September 6-9.	Louisville, Ky., October 10-15.
Syracuse, N. Y., Sept. 12-17.	Atlanta, Ga., October 18-21.
Ogdensburg, N.Y., Sept. 19-23.	St. Louis, Mo., October 24-29.
Poughkeepsie, N. Y., September 28-29.	New York (National), November 14-19.

THE IMPORTANCE OF THE VETERINARY PROFESSION AND THE STANDING OF THE VETERINARIAN IN THE WEST.

BY DR. W. W. YARD, STATE DAIRY COMMISSIONER AND SECRETARY OF STATE
VETERINARY EXAMINING BOARD, DENVER, COLO.

Having been born and educated in New York City, I was, as many others, led to suppose that the veterinary profession outside of the large cities did not amount to anything; but some years of quarantine work on the western ranges for Uncle Sam has impressed me with the great field among the farmers and stock interests of the country.

There used to be a day when the army required its cavalry officers to read up on the horse as well as shoeing, but now that there have been enough regularly graduated veterinarians put into the field, this is entirely changed. The farmer used to think that no one knew anything about live stock except the farmer, and when one of their animals would become ill, several farmers would get their heads together and do something for the sick animal; but this has all changed also.

There is hardly a city or town of any size either in the mountains or plane that has not one, and in some cases a number of graduated veterinarians. And men from the best colleges, too, like the University of Pennsylvania, Cornell, and a number of the larger colleges who have their graduates all over the west.

A farmer to-day never any more thinks of treating his own stock like he used to, than flying with Polhan. And in some sections of the stock country you will find the veterinarians so busy in the fall and spring that you cannot get hold of them at any time. The farmer has learned not only to call the veterinarian as a professional man, but as an advisor, realizing that an up-to-date veterinarian is versed on nearly everything pertaining to a farm. You will find in many cases that a veterinarian is

called upon to give his opinion as to the kind of animals to buy, say for dairy stock, for beef stock, hogs and sheep. The veterinarian is taken into the confidence of the farmer, and he is called on for a great deal of information; therefore the average veterinarian of to-day is not an ignorant man with the exception of knowing something about diseases of live stock, but is well up on everything. This is true and is a matter of some years of observation. It is not a case of the farmer sending his boy east to a veterinary college as it used to be, say fifteen years ago, but it is the city boy who has studied veterinary medicine at some first class university coming out and doing business with the farmer, the farmer's boy going into city life as a clerk, in the army or navy and number of commercial lines; as the salesman from New York or Chicago who comes right out and goes and visits the farmer, probably selling him a large bill of goods. It is this which has made the farmer so intelligent; he has had a chance to meet education, and not pass years of his life without hearing anything spoken of but his own farm products. The farmer in the west is as well conversant with the fact that the Pennsylvania Railroad is building the largest station in the world as the man who lives within five blocks of the station. The farmer to-day is a business man; he keeps books; he reads books and sends his sons and daughters to the universities; and it is this which has brought the city and country so forcibly together, and it is this intelligence which has taught the farmer that his stock in trade is his stock; and when he loses his live stock, he has to do more bookkeeping, and the veterinarian is his best friend.

Take the state of Colorado, and you will hardly find a town in the Rocky Mountains of any size that has not its graduate, and this graduate has the pick of all the surrounding country. This is the cause of the western states having to pass veterinary laws which they have and are doing.

There used to be, and are now, a large number of men who have never been to college. They call themselves veterinary dentists and call at different sections every few months to file teeth. They used to give the farmers the impression that *they* were the

veterinarians of the United States, but by the farmers sending their children to the city to be educated and their reading and traveling themselves, they have found out that these fellows are but a lot of fakirs. So well is this demonstrated, that at the last session of the legislature of Colorado the graduates of the state got a veterinary bill passed, in which a man, no matter if he be graduate or quack, he must take an examination before a veterinary board appointed by the governor, so that every one will know whom he is employing; and if he really knows enough, he can go out and say I am a non-graduate, I have had five years or more of practical work, and you can take me or not as you please. That is what Colorado did. It made the two classes, giving the graduate his place where he belonged, and not have to be classed as a veterinarian with some farmer who could not make a success of farming, so went out to torture dumb animals under the guise of a veterinarian.

The graduate veterinarian to-day in Colorado, no matter from what school he comes (and, by the way, he must be from a school which is indorsed by the government) must take an examination before an examining board.

There used to be a time when some of the city and state offices were held by non-graduates; but to-day there is nothing but graduates, and those of the highest standing in the profession. Even the testing of cattle for tuberculosis is against the law unless a man is licensed, and in case there is any reason proven for a man to have his license revoked, the law gives this right to the examining board. This board has licensed all the old graduates who already had been licensed by the state. But now every man who wishes to hang out his sign must take an examination, which generally has lasted two and a half days, being practical and theoretical. The state only recognizes graduates that are eligible to take the United States Government examinations, and that means that in time there will only be men from three-year schools. I know positively of three men in this state who each have a practice of at least seven thousand dollars a year, *all* among the farmers and stock raisers.

SOME EXTEMPORANEOUS REMARKS ON COLIC.*

BY THOMAS B. ROGERS, D. V. S., WOODBURY, N. J.

I think we bury a great many colic cases every year from the fact that we include all of our cases of intestinal pain under one class as colic. I have for a large number of years tried to differentiate these cases, and I think with some degree of success, and I divide them into three sections. The first, where you get the intense pain, with intervals of ease, normal pulse, and respiration, between the paroxysms of pain. In those cases which years ago we called true spasmodic colic, I have never seen the necessity of giving more than a small hypodermic of morphine, and they are the only cases in which I do give morphine.

There is another class, what the French term congestive colic, that will give us a great deal of trouble, if we do not arrive at a correct diagnosis. In this condition you get carbon dioxide poisoning, pulse thin and thready, and if the temperature is taken you will usually find it subnormal. There is a tendency to lie down quietly, and that tendency in some cases is so great, that he even won't get up under the whip.

When I get one of those cases I very promptly bleed it, and I take if possible a bucket of blood, and if you bleed one of those cases, with the finger on the artery, you will see how the pulse comes up with the blood flow. The third cases of intestinal pain are those cases where you have loss of intestinal peristalsis, with indigestion, and necessarily must be treated in still another manner, and if we are going to adopt a routine method of treatment, for all the different classes, we are going to fill our corner of the equine graveyard.

*Minn. State Vet. Med. Association

I have a friend in England, Mr. Caulton Reeks, and you are familiar with his writings; he is the English authority on colic. He recommends $2\frac{1}{2}$ grains of eserine.

You get a great many symptoms from this you do not want. You put the horse out of business, and what you want from eserine is to get increased action of the muscular coat of the bowel, and when you get that you have all you want. I wrote to Mr. Reeks and told him I thought the dose was excessive, and sent him a tube of tablets I was accustomed to use, and some few months ago I received a letter acknowledging the same. He said that from that $\frac{1}{4}$ grain of salicylate eserine and $1\frac{1}{2}$ grain pilocarpine nitrate, he got all the effect necessary, and was fully convinced that the dose he advised in the last edition of his work on colic was too large.

The gentleman spoke of barium chloride. I use it, but would be very careful in using barium chloride until I had taken other means to soften up the impaction. I should rather expect to get in trouble, and I think some of the troubles with barium chloride have been through giving it in ill advised cases. You cannot take up the use of any remedy as a routine and not get in trouble once in a while. To soften up the impaction powdered ipecac is very valuable. It promotes secretion. We all know how we are called to see a case of colic, and in a few days after get pneumonia. The owner has drenched the patient, got some liquid in the trachea, and set up traumatic pneumonia; he is going to die. I do not like to drench a horse. I get a great deal of benefit from continued irrigations of warm soap suds.

Another condition I would like to say a word on. It is a very important thing for us to be able to differentiate the pain due to a twisted intestine from colic. It is a very nice thing to go in and examine a horse carefully and finally turn to the owner and say, "In my judgment you have a case of twisted intestine and this patient is going to die." After the patient dies, and you show the owner the trouble on autopsy, you have a client for life.

In most cases of twisted intestine you have got the Hippocratic face of peritoneal pain, constant pain and tendency to get

on back. Another point that is present in most of my cases is, that if you auscultate the flanks you get a dropping sound as of water falling into a well. Your pain is practically continuous, and morphine is a good diagnostic agent, because while morphine is an antidote to pain, pain is an antidote to morphine. If you can give a horse from 10 to 15 grains without effect, you can make up your mind you have a twisted intestine. I have felt considerable satisfaction in mapping out these cases.

In impaction you get continuous pain, but your horse will have more or less comfort.

I never saw a case of twisted intestine eat or drink.

Another point in that connection is this, is twisted intestine primary or secondary? I mean is it due to something occurring before the manifestation of pain, or is it due to rolling? I had a case some years ago where the condition showed it was primary.

A pet horse was taken to the blacksmith shop; he was in perfect health when taken to the stable; the owner allowed him to take his customary roll; when he arose he evinced pain which was constant until he died. Autopsy showed intestinal strangulation.

P. H. BROWNING, San Jose, Cal., writes: "Enclosed find check for \$3.00 for which please renew my subscription for the REVIEW, the best friend of the veterinarian."

DR. J. T. SHANNON, of Lexington, Ky., was recently appointed live stock inspector for Fayette County. The doctor began his duties at once by inspecting the sheep exhibits at the Blue Grass Fair, preparatory to their being shipped out of the state.

THE many friends of Dr. William Sheperd, of Sheepshead Bay, will be pleased to learn that his recent accident, caused by a large double-deck automobile frightening his horse, while driving, while painful is not serious. The doctor was pretty well bruised and shaken up, from the fact that he held on to the reins after being thrown out of his buggy, and was dragged a considerable distance. However, he has managed to get around and attend to his practice despite his sore condition.

REPORTS OF CASES.

VETERINARY OBSTETRICS.*

By DR. G. U. MARCHAND, Uhrichsville, O.

My subject for this occasion is Veterinary Obstetrics, and a brief case report of Dystokia in mare, cow, bitch and sow. The generation and development of animated creatures is correctly described as an "eminently physiological act," and one which is generally carried out from beginning to the end, as a perfectly natural process, and without any extraneous interference being required for its accomplishment. But, speaking now with regard to the higher order of viviparous animals, this happy termination of a most important series of phenomena is not always observed; and not infrequently various causes, internal as well as external may operate unfavorably in a number of ways, and more or less imperil the perfect development or existence of the young creature, or compromise the health or life of the mother. More especially is this danger likely to occur when the period arrives for the expulsion of the fœtus from the abdomen of its parent. With the domesticated animals, when these obstacles to development or birth intervene in order to remove or overcome them, and assist or supplement the natural efforts, recourse must be had to artificial means, and the resources of science and art are accordingly invoked. The term "Parturition" is applied to the act by which the product of conception when it has reached a certain stage of development, is expelled from the body of the mother; and this act is that which is usually considered to be the most critical in the existence of the young creature, and to most frequently demand attention in such valuable animals as the mare, cow, sow, etc. The parturition of the domesticated animals and the abnormal condition which may precede or follow that event, come within the province of veterinary science and from that division of it named "Obstetrics," which has aptly been designated the "Science of Midwifery," when applied to this division of human surgery. Though it is that which has been selected as the title of this paper, and though it is also that which is most frequently employed in technical speech by the veteri-

*Read before the Ohio State Veterinary Medical Association.

narian, yet it is not correctly applied with respect to animals as it is to mankind; inasmuch as, according to one derivation it implies to "stand before" (obstare), whereas, in aiding in the birth of animals the operator generally stands behind the creature which is in difficulty; though if the derivation from obstare, which also means to "oppose," be accepted, then the term is quite justifiable and expressive. The term "Obstetrics" is not, as has already been shown, limited to the act of parturition—certainly one of the most important, and yet difficult, of all the animal functions; for it includes not only rules which should be followed in order to remove or remedy the material obstacles or accidents which may hinder the accomplishment of the act, but likewise embraces everything connected with the health and preservation of the female parent and the young creature while they are in the closest relation with each other before parturition, as well as for sometime after their disjunction. It, therefore, essentially comprehends a mechanical portion, which consists in devising means for surmounting obstacles that may impede the birth of the young animal, and scarcely less important, a thorough knowledge of those complex functions and conditions connected with conception, generation, and the parturient state. The veterinarian then, to be a successful obstetrician, must possess special and varied information of a highly scientific kind in the domain of anatomy, physiology, hygiene, pathology, surgery, etc., and to this must be added the benefits to be derived from experience. The science of veterinary obstetrics, then, demands a perfect acquaintance with the anatomy and physiology of the generative organs and the region in which they are situated in the different animals. The study of the organs concerned in generation is essential to acquiring a knowledge of their several functions, and it is only through understanding these functions that we can appreciate the normal or abnormal course they may pursue, and be prepared to interfere successfully when required, and a correct notion of the formation, structure, magnitude and other features of the region containing these organs and which has been named the pelvic cavity, is absolutely necessary if we wish to understand the act of parturition in the several animals, and to be able to render useful service when delivery of the young creature is hindered by mechanical obstacles. A knowledge of the physiology of these organs and the phenomena pertaining to generation—the formation of the foetus, its development and external conformation, and its connections with the parent, with

gestation and the modifications it produces in the organism—as well as anomalies, accidents, and diseases which may occur during this period, is required, in addition to an acquaintance with that of the final act which we have named “Parturition.”

The four chief functions of the generative system may be enumerated as follows: Oestrus, conception, gestation and parturition, all of which are intimately related to and dependent upon each other—a failure or defect in one disturbing their relationship and leading to sterility or irregularity in reproduction. Deviations or anomalies in form or structure of the individual organs upon which these functions rely for their proper performance, will also tend to interfere more or less with their accomplishment. The difficulties attending parturition, whether they depend upon the mother or the foetus, or upon both, with means of overcoming them, and the accidents which may complicate difficult parturition, is called Dystokia.

Cases of dystokia are much more frequent in the bovine species than in any other, and least so, perhaps, in the equine species. These two species are those to which the veterinarian is generally called upon to attend during protracted or difficult parturition, and every practitioner who has had any experience in this matter, will agree that for one case in the mare there will be at least ten in the cow. Cases of dystokia are not infrequent in the bitch and quite frequent in the sow. A very great disadvantage under which the veterinary obstetrict labors in cases of dystokia is the late period at which his services are generally called into request, and often after serious and even irreparable injury has been done by unskilled hands, and this in instances in which a little scientific manipulation and some surgical knowledge would have perhaps, made all right and safe in a few minutes. The services of a veterinarian can be beneficial only on the absolute condition that he is present in good time. Called upon too late, when the “waters” have escaped for a long period, and the neighboring empiric has exhausted his science, aggravated a bad presentation, irritated the generative organs by manipulations, tractions and violent means; then the ability of the most experienced practitioner may be useless. He will find the passages dry, burning, swollen by inflammation, the foetus more or less advanced in the pelvic cavity, where it may be said “wedged” with the uterus spasmodically contracted on itself, and so closely applied to the body of the foetus that it is almost impossible to pass the hand between them. How is it possible to manipulate in such a

place—how change the vicious position of a foetus which the greatest efforts cannot make advance or retire? How can a sharp instrument be carried into the uterine cavity and be used with safety, when the hand alone can scarcely be made to enter it?

The conditions under which the veterinarian has to perform his task are not favorable or encouraging. In practising these manipulations, the operator has to contend with the struggles and disordered movements of the animals, which sometimes, in the midst of its sufferings, does not hesitate to use its feet, horns, or teeth as weapons of defense, or to crush its medical attendant against the adjacent wall. In addition, the violent contractions of the uterus, and especially of the cervix, fatigue the operator extremely; sometimes these manipulations have to be continued for hours, destitute of light, and perhaps, cold, wet and dirty, exposed to draughts and every kind of discomfort; most frequently, too, he is left to his own resources; and all this after driving long distances, often at night and in bad weather, etc.

CASE REPORTS.

Case No. 1.—On May 1, 1909, at 4.00 a. m. I was called to the country to see a small bay road mare. On my arrival I found a Sterno-Sacral Presentation of Foetus, with its front limbs protruding out of mare's rectum above the carpus, and head out of vagina. I at once undressed and prepared myself to save the mare's life, making my hands and instruments as aseptic as possible. I amputated the limbs above the carpus, pushed the remaining portion through the laceration into vagina; owing to the tumified condition of vagina and vulva, it was necessary to cut the remaining portion of each limb to necessitate an easy delivery, removed the placenta, sewed the laceration, prescribed diuretics and febrifuges, and laxative diet; also irrigations of creolin solution to affected parts. The mare defecates and micturates normally and made a complete recovery.

Case No. 2.—May 9, 1909. On Sabbath morning I was called to see a cow in the suburbs of our city. On my arrival I inquired for the owner. The reply was, "Father and mother went to church and they told me to help you." So I asked him where the patient was that required my attention. He took me over to a small pen built of rails, and here she was, lying down. I made her get up and interviewed the case. The son told me she was sick since Thursday. She showed colicky pains. I

asked him whether she was pregnant. "Yes, sir, her time is up," was the reply. Well, then, I advise you to take her to the barn and get some warm water soap and a towel. I made an examination per rectum and detected a torsion of the uterus. By this time two of the neighbors called and I asked them for their assistance. I then proceeded to cast the patient, secured her, and disinfected my hands thoroughly, then passed my right hand into the vagina and plainly detected left torsion of uterus. Two and one-half turns of the cow was necessary to untwist the uterus. The fœtus was delivered with some difficulty. Left treatment and called next day to remove placenta; after treatment consisted in the line of febrifuges, followed by tonics, and the cow recovered without complications.

Case No. 3.—June 29, 1909, I was called to see a fox terrier bitch which had given birth to a pair of nice puppies two days prior, but still showed signs of uneasiness and no appetite. I made an examination per vagina and detected a puppie, but as the vagina and vulva were so badly swollen, it was impossible to use instruments, so I at once advised an operation, which the owner agreed upon, as he realized the condition she was in. I carried her to my office in a basket, prepared her for the operation, and informed Drs. Demster and McCollams, two practising physicians, of the operation which was about to take place. On their arrival the operation began. Median operation preferred, the parts being previously prepared, an incision was made in the median line, the uterus exposed and an incision made into the uterus. Two dead gangrenous fœtuses removed; membranes removed were green as grass. Uterus sutured with Lembert sutures, and external incision with silk; treatment, tr. echinacea internally and injections of creolin solution per vagina. The bitch died the second day after the operation. The operation was a success, as the patient died from septicæmia. The two orphan puppies did nicely nursing the bottle until they were large enough to partake of food themselves.

Case No. 4.—Cæsarian section in sows for the removal of fœtuses where normal birth is impossible has always been to me a very interesting subject, although my experience is limited to only seven cases. The first case died, the other six cases made nice recoveries. *Case No. 1*, operated on August 7, 1905, at 10 p. m., died two days after the operation from enteritis and peritonitis: autopsy revealed accidental incision in small bowel. The young pigs, five in number, were raised on the bottle and made fine pets. My technique of operating is as follows: The sow is

cast on the right side, the hair over the left flank is shaved, and all loose hair is brushed away. I shave a large surface so as to allow of drawing much of the uterus out and not contaminating it by touching unwashed parts after the parts are thoroughly scrubbed. The ether is then administered and usually it takes a few inhalations to get them under, when I give it to some assistant to use as I direct. I wash my hands in an antiseptic, and with the sharp scalpel make a bold incision in the skin and muscular tissues down to the peritoneum, six to eight inches in length, almost vertical, but slightly slanting from the point of the ilium toward the sternum. When the peritoneum is laid bare, puncture a small hole with the scalpel, then introduce a grooved probe and make the incision to compare with the other incision. Insert hand and at once locate the contents of the uterus; ascertain how many foetuses are there and how they are distributed, which is a guide as to the procedure of their removal. I usually lift out the top or nearest horn of the uterus with its contents and lay them out on the washed skin of the mother, and, drawing down the horn to its bifurcation, make a longitudinal incision in the uterus large enough to extract a pig. I usually have an assistant grasp the pig and extract it, leaving myself with clean hands to manipulate the foetuses to one opening where the assistant will continue to draw them out. When the pigs are all removed from the upper horn proceed in the same manner with the lower horn, and when they are all removed, the placenta is carefully removed; close the incision in the uterus with catgut sutures. After suturing, wash the uterus that is contaminated thoroughly with antiseptic solution. When all is disinfected, replace the uterus and close the abdominal incision with strong silk, using the interrupted sutures. If the operation is a neat one, it will be hard to see the wound in the skin, as the parts come together so nicely, and a great many will heal by primary union. If we veterinarians can do this work successfully, there is no operation we do that commends more profound respect on the part of our farmer friends than this one of Cæsarean section.

PECULIAR ACCIDENT TO DOG.

By WM. D. HOWATT, V.M.D., Portchester, N. Y.

Aged fox terrier bitch running through tall grass suddenly began to cry out as if in severe pain. When found, she was sus-

pended upon a tooth of horse hay rake, entering just back of right shoulder and coming out of thigh just above hock joint.

Muscles back of shoulder lacerated badly and those of thigh also badly lacerated, in fact, torn and pushed through opening in skin.

Point of rake tooth must have glanced off of one of ribs and simply separated skin from flesh. The illustration shows a



large seton needle inserted in wound, and at each end a piece of gauze bandage fastened to needle.

Accident happened June 19th, and on July 22d patient went home entirely healed, with no indication of any permanent lameness.

HERMAPHRODITE OPERATION.

By Dr. H. E. MYERS, Fostoria, Ohio.

On July 11, 1910, I was asked by Dr. J. W. Rossiter to assist in performing an operation, which, being somewhat out of the ordinary, I will endeavor to describe.

After arriving at the farm a distance of ten miles, we were informed that our patient was in a pasture of 100 acres with some other colts. The owner had given us just enough information to stimulate our curiosity on our journey around that pasture, even though the temperature was 105.

We were taught, however, that perseverance brought success, so after about two hours of crawling under and climbing over shackle rods of which the field was full, being an oil farm, we succeeded in driving the colts into a shed. By this time we as well as the colts were hot (and it was a dry town), but we had only began, for the colt had never been haltered, and we had to get a rope around his neck and choke him down three times before we succeeded in getting the harness on. We were saved the trouble of casting, for he laid down, and we had him tied before he could get up.

He, she, or it was a black road colt two years old, with the actions of a male, would attempt coitus, but of course could do nothing unless he backed up, which he evidently had not learned. There was a rudimentary vulva in the normal position. Protruding from where the clitoris should be was a penis about four inches long and one and one-half inches in diameter while erected. The mammary glands were well developed, in fact were large for a two-year-old.

Dr. Rossiter being in need of rest, I took my time in making an examination and disinfecting the field of operation.

An incision was made through the skin close to the flank on account of the mammary glands. After dissecting in about two inches, an enlargement was discovered which looked as though it might be a testicle, but proved to be a convoluted portion of the dorsal artery surrounded by adipose tissue.

An entrance to the abdominal cavity was made through the inner oblique muscle close to the median line. Just passing two fingers the testicle or spermatic cord could not be found. The entire hand was introduced and the right testicle was found attached to the psoas magnus muscle about five inches anterior to where it should have been. The cord was very short, but having a wound that was plenty large by this time, we succeeded in tying the cord with catgut. The left testicle was found about opposite of the right.

The testes were about the size of a small walnut smooth and firm with no signs of an epididymis; the internal wound was closed with interrupted catgut sutures, dressed with tr. of iodine

and a pack of absorbent cotton, applied over which the skin was sutured just tight enough to hold the pack.

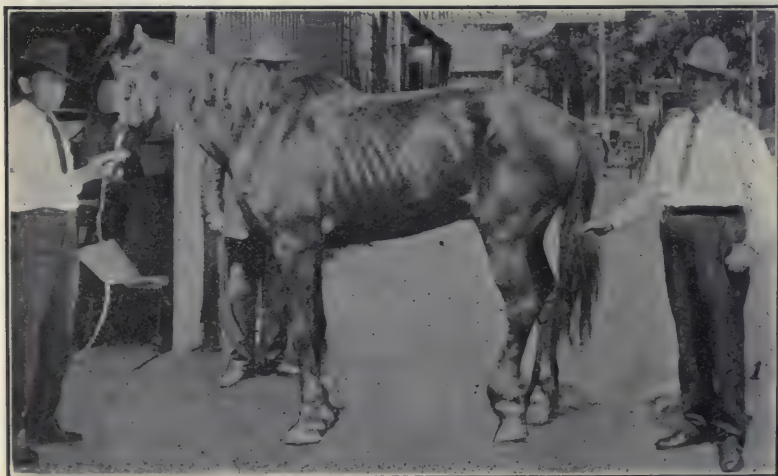
After the operation the colt was turned back in the field and allowed to run. Three days later we removed the stitches and pack and found the wound in good condition; no swelling except a very little at the umbilicus, and the colt feeling fine. Farther recovery was uneventful. Before closing, will make mention of another rather peculiar case of cryptorchid castration on a four-year-old that had one testicle removed at one year old.

Dr. Rossiter introduced the entire hand and found nothing of the testicle or cord. Then forcing the arm in to the elbow farther search was made, declaring there must be one somewhere or the gentleman instinct would not be so prominent. He asked me if I ever saw a horse with a floating kidney, for he either had a testicle or kidney, and it was where the kidney should be. Drawing it out, it proved to be a testicle as large as two fists, very soft, and attached by a cord no larger than a lead pencil. The horse made a good recovery, no swelling being present at any time. Campho-phenique was used in this operation.

TENOTOMY IN BOTH POSTERIOR MEMBERS.

By CHAS. A. DOWNEY, M.D.V., WAYCROSS, GA.

The case represented by Cut I. was of two years' standing when presented for advice. Tenotomy was advised and per-



formed. Cut II. shows the condition of the horse and the legs some time after the operation; the horse standing exactly as in



Cut I., with what had been the worst leg to the front of the picture.

A UNIQUE CASE OF LACERATION OF THE SPHINCTER ANI.

By A. B. COOKE, M.D., Nashville, Tenn.

On February 26, 1910, the patient, a boy, seven years old, was brought to St. Thomas Hospital, accompanied by his father and physician. The following remarkable history was related: About noon on the day named the boy who lived on a farm, went out to his favorite place behind the corn-crib to attend to a call of nature. While engaged in the act, a pet dog, a hound of middle size, came up from the rear and mounting him, affected entrance into the anus and became "accoupled." The boy's outcries quickly brought his mother upon the scene. The dog had reversed his position and was in the same relation to the boy as is ordinarily assumed in the natural act with a bitch. The mother's excitement was naturally marked and in her frantic efforts to disentangle the two, she used considerable violence and finally succeeded in separating the dog.

The family physician on his arrival found that the hemorrhage had practically ceased, but upon inspection of the bowel found the parts were badly lacerated and advised the patient's removal to Nashville for treatment.

Dr. Cooke's examination found very little evidence of external injury. Traction upon the anus, however, showed that several internal lacerations of considerable extent were present. Under general anesthesia the deepest of these was found to be in the middle line posteriorly, extending from a point two inches up the rectum through the sphincter muscles, and out upon the skin surface for a distance of approximately one inch. The external sphincter was torn in two places at this site, one tear being complete, and other partial. Anteriorly there was a second laceration into, but not through, the fibers of the sphincter. In addition there was a number of minor tears in the anal margin involving the superficial tissue only.

Fourteen interrupted catgut sutures were used in repairing the posterior laceration, and four in the anterior one. The others did not require suturing. The result was entirely satisfactory. Union was prompt and complete and the patient returned home in two weeks with perfect sphincter control.

The unusual case of sodomy related above was sent to the REVIEW through the courtesy of Dr. Geo. R. White, who states in his letter of transmittal, that Dr. A. B. Cooke is one of their highest class medical men in Nashville and a rectal disease specialist. He closes his letter by saying—"I saw the patient and know all the circumstances related by Dr. Cooke in regard to same."—Ed.

Mary had a little calf,
Whose bawl most bust his throttle;
For the milk that he had ought 'er had
He seen put in a bottle.

—Horn and Hoof.

Dr. W. G. CHRISMAN, State Veterinarian of North Carolina, who occupies the unique position of being secretary to two different State veterinary medical associations at the same time; viz., the North Carolina Veterinary Medical Association and the Virginia State Veterinary Medical Association, speaks of the excellent meetings they have had of both organizations recently, and says of his own State: "The profession in the State seems to be ever advancing. More young men going into the profession annually. Our State holds many inducements for wideawake practitioners."

ARMY VETERINARY DEPARTMENT.

STATUS OF THE ARMY VETERINARY BILL.

Replying to inquiries about the status of the Army Veterinary Bill, we briefly report that S. 1692, "To increase the efficiency of the veterinary service of the Army," passed the Senate on March 9, 1910. It was not taken up for consideration by the Committee on Military Affairs of the House, on account of Chairman Hull's absence from Washington on the political campaign in his home state, which, together with the much-heralded policy of economy practised by Congress, blocked nearly all military legislation.

However, the Army Veterinary Bill does not die with the adjournment of this Congress and will still be pending before the Committee on Military Affairs of the House when Congress reassembles on December 9, 1910, for the short session ending in March, 1911.

Little active work was done in pushing the bill because Chairman Hull early informed Drs. Melvin, Mohler and Turner that there was absolutely no prospect of the measure passing the House at the late session of Congress.

A number of army veterinarians, however, became very uneasy about the bill, foreseeing failure over again, and they started to make propaganda for the bill among the members of the House Military Committee, which, if it had no other effect, disclosed the fact that there really was no opposition to our bill, but rather a sympathetic feeling towards it.

No line of work for the bill has been agreed to for the coming session as far as we know. Chairman Hull has failed to be re-elected and much will depend upon his successor and, perhaps, also, upon the political coloring of the new Representatives elected. One thing is certain, however, that a campaign for the bill will have to be short and decisive if the bill is to be taken up and passed, because the short session is not only limited in time, but has already been divided into days of the week for certain kinds of bills, and precious little time is

left for the consideration of so personal and unimportant a bill as ours is.

Altogether, the sky ahead of us is not bright just now. Changes in the personnel of the General Staff are said to be not favorable for our cause, and we shall be mighty lucky if this belated veterinary bill, limited in its improvement of the army veterinary service as it is, will finally be passed by Congress. If not, we may even witness a reaction from what little we have gained since 1899, not to speak of a hope for a commission and a Veterinary Corps, the outlook of which is frustrated for years to come. Verily, we are taking a slow course in evolution under guidance of Father Time.

O. S.

ARMY VETERINARY PERSONALS.—Nearly all the army veterinarians are in the field practising in annual marches and maneuvers. At Leon Springs, Texas, a veterinary field hospital has been established and Dr. Fred Gage, 3d Field Artillery, is in charge of it. This is a new venture, inaugurated at the Texas maneuvers in 1908, and has proven a decided success.

Dr. Aquila Mitchell, 3d Cavalry, has officially forwarded a report on the investigations he made of "horse-dying" in Tlahualilo, State of Durango, Republic of Mexico, whither he was sent by our War Department. The disease proved to be forage-poisoning, infectious cerebro-spinal meningitis. The report is concise, but clear and interesting.

O. S.

DANGER IN FEEDING ROOTS.—Stockmen have long been of the opinion that a ration of mangels or sugar beets in some way causes kidney or bladder stones when fed for any length of time. To shed some light on this subject the Iowa Experiment Station has been carrying on some experiments in feeding mangels and sugar beets to rams. The results of these experiments show conclusively that such feeding is attended with considerable danger, and is almost sure to prove fatal if continued for any considerable period of time. For short fattening periods there is no particular danger, and the root makes a valuable addition to the ration. A full account of the experiments is given in Bulletin No. 112, which may be obtained free by writing to Chas. F. Curtiss, Director Iowa Experiment Station, Ames, Iowa.

ABSTRACTS FROM EXCHANGES.

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

ILEO-COECAL INTUSSUSCEPTION IN A BITCH [*A. W. Noel Pillers and H. Thompson*].—A seven-months-old spaniel bitch is reported as having passed blood-stained feces several times, had no appetite and vomited. She, however, presents nothing very abnormal and after a little watching, she is sent home. Several days later she is reported to be in the same condition, and that the feces are abnormally soft, yellow and occasionally stained with blood. She strains much and has lost considerable flesh. She assumes peculiar resting positions; in one she stretches out with fore limbs horizontal and the hinds vertical, as begging in a corner. Or again the head would be placed across the loins and the bitch would jump out of her box to assume the former position. On careful examination and palpation of the body, a large mass is made out extending from the stomach to the umbilicus. By the rectum a fleshy body is detected. Intussusception with adhesions is diagnosed. After all minute antiseptic preparations, "laparotomy was performed over the enlarged mass and that portion nearest the rectum was lifted into the wound. Great changes had been expected to be found in the bowel but they were only a little injected, thicker and harder than normal. Gentle pressure soon caused the ileum to return along the colon, until the hardened in-turned portion of the ileum, near the cæcum was reached. This being hardened by inflammation, cracked under gentle pressure. Three fine sutures were inserted. Between eight and ten inches of ileum were inside of the colon. The bowel was returned and the wound closed." Milk and barley water diet was allowed. A slight complication with temporary elevation of temperature took place, but the little patient recovered well after a comparatively short time.—(*Veter. News.*)

IRREDUCIBLE INTUSSUSCEPTION — OPERATION — RECOVERY [*Prof. H. A. Woodruff*].—Black and white cocker spaniel, six

years old, has always been in good health. One day she passed blood per rectum. She had no vomiting, no pain on the abdomen. She received proper treatment and was relieved. Several days after, however, she is again taken in the same way, and by careful examination of the abdomen an intestinal obstruction extending back from the ribs was felt just within the rectum. It is a long cylindrical swelling which presented this peculiarity that is felt at one moment, at another only a hard nodule as large as a hen's egg could be found. Opening the abdomen under chloroform gave an explanation. An intussusception eight inches long of the large intestine was found, and quite easily reduced, as there was no adhesion. During the process of reducing it, a second intussusception was detected of the entire cæcum into the colon. This was treated as follows: "It was decided to amputate the piece of bowel involved, consisting of a short piece of small intestine, the cæcum and a short piece of colon, in all eight inches of intestine. The vessels of the mesentery were ligated and the large bowels were ringed around by an incision through the serous and muscular coats, leaving the mucus intact. The serous and muscular coats were split, reflected from the mucus and then cut through. Thus a tube of large intestine was left, of which a part was denuded of mucous membrane and had a raw internal surface. Into this tube the small intestine was inserted and the large tube stitched round the smaller with fine silk. The abdomen was closed in the ordinary way. Milk diet for the first week. Soft diet the second. Feces passed off the third day. Wound healed without complications."—(*Veter. News.*)

HAIR-PIN IN THE OESOPHAGUS [*E. Wallis Hoare, F.R.C. V.S.*].—A greyhound puppy has some twine hanging from the mouth. Although it is pulled out, the dog acts as if he has something in the throat. By external manipulations, a short distance from the pharynx a foreign body is detected. On the right side it is blunt, on the left it is sharp. It is situated right across in a transverse position. Manipulations are very painful. An incision is made on the blunt end on the right side, the foreign body is extracted with bone forceps. It was a hair-pin whose ends were bent on each other. Recovery followed without trouble.—(*Veter. Rec.*)

MUMMIFIED FOETUS [*M.R.C.V.S.*].—Three-year-old heifer had been served and when normal period of gestation ended, she

showed no indications for parturition. She remained healthy. Examined by the author he found the vulva much wrinkled, and the introduction of the hand in the vagina was impossible. Rectal examination was negative. The animal was slaughtered. A foetus was found in the uterus. It measured seven inches in length and was surrounded by its envelopes. The uterine walls were thickened. The cow had been served only once and that twenty-three months before being killed.—(*Ibidem.*)

IMPACTION OF THE DOUBLE COLON SUCCEEDED BY RUPTURE [*E. Wallis Hoare, F.R.C.V.S.*].—Seven-year-old cart gelding had an ordinary attack of colic, which was treated by the stableman. The next day the colic returned rather acutely. Chloral and linseed oil gave temporary relief only, when eserine sulfate was injected. Small amount of hard feces were passed. The animal sat on his haunches and was in great pain. This condition lasted for several days, chloral, arecoline, eserine, enemas being given without any effect. After an illness of fourteen days death took place. Autopsy: Acute diffuse peritonitis, fluid in the abdomen mixed with intestinal contents. "The contents of the double colon in the first division was fluid, in the third there was a small rupture. The fourth division was enormously distended with food and had a large rupture not involving the mucous coat. Floating colon was empty."—(*Ibidem.*)

ACUTE ENTERITIS [*Same Author*].—An aged thoroughbred mare had foaled two weeks previous. She has colic one morning. Gets a dose of chlorodyne. She is bad again in the evening having violent pains, lying on her side, sometimes on her back with head turned sideways, when she seems to get some relief. At times she would depress her head and carry one fore foot over the nose. There was slight tympanitis. The mucous membranes were injected, the pulse quick and weak, the respiration accelerated. She received chlorodyne, chloral, morphia. She died. Autopsy: Acute hemorrhagic enteritis of the double colon, ingesta stained more or less with blood.—(*Veter. Record.*)

VALVULAR DISEASE WITH DILATATION [*Major W. R. Walker, A.V.A.*].—Aged eight years, this black gelding always worked well and has never been sick. One morning he is found lying down and is making violent efforts to get up. He is then taken to a loose box where he lays down immediately for an

hour, struggled some and died. At post mortem the heart is found hypertrophied, especially on the right side, where the auricle is twice the normal size. Its fleshy walls are flabby and easily torn. The valves were much thickened, especially the tricuspid. The heart weighed 10 pounds. All the other organs were healthy.—(*Veter. Journ.*)

TETANUS IN A DOG [*J. Stewart Wood, M.R.C.V.S.*].—Male fox terrier, about eight years old, had ticks on his back which were removed with spirits of turpentine. The dog rolled himself afterwards in a garden. Some days later he gradually became stiff and soon undoubtful signs of tetanus were present. Head raised, spine depressed, legs stretched out, a typical opisthotonos. As experiment he was put under chloroform, but as soon as its effects had subsided, the symptoms returned. Death took place three days after.—(*Veter. Journ.*)

SARCOMA OF THE FEMUR IN A MASTIFF [*Prof. G. H. Woolbridge, F.R.C.V.S.*].—This dog was seven years old. He had been lame on one hind leg some time previous, but had recovered. However, he now and then had short relapses. Finally he became quite lame, but this passed off by exercise. Rheumatism was suspected. When the writer saw him he had an enlargement at the junction of the middle and lower thirds of the femur. It was tense and painful. Ostitis was diagnosed and local applications of iodine prescribed without satisfaction. The swelling became softer, the lameness and pain increased, and the dog was chloroformed. The examination of the leg revealed the nature of the enlargement (round-celled sarcoma), with destruction of the bone and extensive periostitis of the remaining portion.—(*Veter. Journ.*)

FRENCH REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

CYSTIC FIBRO-MYOMA OF AN UTERINE HORN IN A CAT—LAPAROTOMY—SUB-TOTAL ABDOMINAL HYSTERECTOMY—RECOVERY [*Dr. Richard*].—When six years old, this animal was intoxicated by licking zinc ointment. She recovered and with this exception has always been healthy. She is nine years old

and lately has lost her appetite and flesh, while her abdomen has grown larger. A veterinarian consulted thought she was pregnant, but as she had very good habits, this was considered impossible by the owner. Then perhaps she has chronic peritonitis. To settle the question, radioscopy is resorted to and both suppositions are excluded. A few days later, greenish and very thick pus is observed on a spot where the cat had laid down. This contained streptococci and staphylococci in great quantity, with also a few bacilli, leucocytes and pus corpuscles. A closer examination brings out a final diagnosis of abdominal tumor of the uterus or its annexes and an operation is decided. The cat was anesthetized with chloroform 1 part and ether 2, and with the greatest of care anesthesia obtained. The parts were thoroughly disinfected and the abdomen opened with an incision extending from the umbilicus to the anterior border of the pubis. A small quantity of peritoneal fluid escaped, and a large tumor not adherent to the left uterine horn was exposed and isolated. The uterus and horns were removed with the tumor. The after care was very minutious as the animal had spells of syncope and had to receive caffeine and hyoscyamine. Towards the fourth day the animal began to take food. The improvement continued on the 5th and 6th, and on the 7th the dressing was taken off and also the straight jacket in which it had been necessary to put the animal to prevent him scratching the dressing off. Recovery and union were complete about the twelfth day. The examination of the tumor showed it to be a cystic fibro-myoma.—(*Bullet. Societ. Centr.*)

JAUNDICE FOLLOWING CASTRATION IN THE HORSE [*A. Bouquet*].—The author has castrated some 500 or 600 horses, and with exception of two fatal cases of septicemia, he has had no reason to complain of the results he has obtained with his mode of operating, viz., disinfection of the scrotum, with tincture of iodine, operation by covered testicles one or two injections of anti-tetanic serum. His horse resumed work after the ninth or tenth day with a complete cicatrization of the wound towards the fifth or sixth week.

He has, however, observed, say, seven or eight times in a year, principally in horses that had been castrated seven or eight weeks before, symptoms of jaundice, more or less serious, receding rapidly by proper treatment, but in some rare cases accompanied with manifestations of cerebral excitement as in meningo-

encephalitis. With proper treatment of cold applications on the head, injections of pilocarpine and cold water enemata, recovery is, however, the rule. The author inquires whether or no there can be relation of cause to effect in those accidents of jaundice, as such he has never noticed in stallions or in mares.—(*Rec. de Medec. Veter.*)

STIFF NECK OR CERVICAL MYOSITIS IN DOG [*A. Videlier, Army Veterinarian*].—This trouble is frequent in long haired water animals, in dogs hunting in ponds, marshes, etc. The symptoms have an apparent severity. The dog holds his head stretched forward and the pain due to any movements of the head gives rise to great howlings. The animal is afraid of moving and in fear of any one touching him. Rather than lie down, he often prefers standing, resting his head if possible on a chair. Although the fever may be rather slight, the dog refuses food because of fear of pain in moving his jaws. The author relates a case in which one of his dogs suffered terribly a whole day. Castor oil and frictions of emetic ointment on the neck brought an improvement the next day and in forty-eight hours the dog was well. As in some cases the pain manifested by the animal might suggest the possibility of meningitis, it will be prudent for young practitioners to bear in mind the possibility of a sudden appearance of acute localized myositis which may also be very painful.—(*Rec. de Medec. Veter.*)

INTESTINAL INVAGINATION IN FOWLS [*J. Guittard*].—Such intestinal lesions are not recorded in any work relating to diseases of fowls. The writer has observed one case which he relates as follows: "This bird was sick for several days. The previous history is not known. Since three days that she is in the flock she has not eaten anything and she is killed. After being feathered, her carcass appears very thin, evidence of a sickness of long standing. The crop is enormously filled. On opening the abdomen the small intestine is found much dilated of a brown color and full of liquid excrement. The dilatation is limited and stopped suddenly at a hard portion. Then comes the cæca and the rectum. The remains of the intestines are empty except for a little grey substance. The hard portion is incised and all the characters of the invagination are exposed, with the three coats of the intestines. The first and second layers, mucus against mucus, are easily separated, but the second and third lined by

the serous membrane are adherent, and finally the internal wall of the third coat lined by the mucous membrane is filled with mucus mixed with feces.—(*Prog. Veter.*)

TEARING OF THE GREAT POSTERIOR STRAIGHT MUSCLE OF THE HEAD IN SUCKING CALVES [*Same Author*].—An accident that can take place, when the calf is taken away with force from his mother while he is sucking. What may then occur? says the author. A seven-months-old calf is suddenly showing signs of general locomotor ataxia. Yet if placed in a standing position on his hind legs, he holds well on them and with his fore in good position. But if he is not supported, he staggers, carries his head to the right and finally drops on the ground. Lying down, and he always does it on the right side, he holds his head backwards. His appetite is good and rumination normal. Congestion of the brain is suspected. Bleeding and cold water on the head are resorted to, and after a few days the animal is slaughtered. At the autopsy a clot of blood already organized will be found back of the axis corresponding to the origin of the great posterior straight muscle, as the writer has found it in the case recorded above. This is an accident which deserves attention.—(*Prog. Veter.*)

RARE CASE OF SERO-FIBRINOUS PERICARDITIS IN THE HORSE [*Prof. Leblanc and Mr. Reibel*].—This mare is between 18 and 20 years old and for some time she has been suspected of suffering with pericarditis. One day she is found lying down and unable to get up. She has a large swelling under the chest and abdomen; her pulse is strong and the artery full. By percussion of the chest, a zone of dullness extends in the cardiac region between the third and sixth ribs. It reaches about half way in the thorax. Auscultation is negative. Pericarditis with exudation is diagnosed. The animal dies after a few days. At the post mortem, a quite abundant quantity of fluid was found in the pericardium, with the parietal layer considerably thickened and united to the visceral layer by numerous thick dark yellow false membranes.—(*Bullet. Soc. Scien. Veter., Lyon.*)

PRIMITIVE SARCOMA OF THE KIDNEY GENERALIZED TO THE LUNGS IN A DOG [*Mr. Antonio, Maja*].—Four years old, this dog presented all the ordinary clinical signs of gastro-enteritis and also of ulcerated stomatitis with caries of the inferior jaw. Be-

sides those, in exploring the abdominal cavity the presence of a large tumor was detected. Notwithstanding great care the condition grew worse and the dog died. At the post mortem, the ordinary lesions of gastro-enteritis were made out, but the condition of the left kidney attracted principally the attention. This organ is enormous, and recognized only by the ureter that rises from it. It is transformed into a voluminous mass, as big as the fist of a man, irregularly bosselated, and having on its surface large blood vessels. Not adherent to the surrounding tissues it is easily removed. It then appears as a neoplastic transformation of almost the entire kidney. Yellowish in color, it is soft in consistency and looks like adipose tissue. It is composed of three masses, all connected into one by the renal capsule. The other kidney is healthy. In the lungs there are metastatic centers, in small number and of small size, say about an hazel nut. Their characters resemble those of the renal tumor. All by their macroscopic and microscopic examination revealed their true nature, a *Globo-Cellular Sarcoma*.—(*Bullet. Socie. Cent.*)

A CASE OF ESOPHAGEAL JABOT IN A DOG [*Mr. Renou, Army Veterinarian*].—After making violent efforts of deglutition, a low bred dog swallowed a large sized piece of meat. Since, he always has trouble in deglutition. This has increased considerably and the dog after several months of misery is in a perfect state of marasmus. In very poor condition, he is stiff and sore all over, his back is arched and his chest dilated. He walks in making short steps. When he takes solid food, the repeated efforts he makes to swallow are brought out. Notwithstanding a special regime, which was made to allow easier deglutition the condition grew worse and the animal was destroyed. At the post mortem, a tumor as big as the fist of a man is found in the thorax; covered by the lungs, it is formed of fibro-lardaceous thick tissue. It is a cavity full with pieces of bone mixed with whitish fluid and communicating with the cavity of the œsophagus by a long slit. There were no indications of parasitism and it is probable that when the dog swallowed the large piece of meat, several months before, the muscular coat of the œsophagus gave away and the mucous membrane formed a hernia with the jabot as a consequence.—(*Rec. Medec. Veter.*)

CURIOUS LESIONS OF THE SPLEEN IN A HORSE [*Mr. Ragneau, Army Veterinarian*].—This young horse has been laid up

on various occasions for ailments which, relieved by treatment, had never been positively diagnosed. Submitted to special diet he improved, but as soon as he resumed his ordinary feeding, the troubles returned again, varying in intensity and duration. He finally died. At the autopsy there were found 15 litres of sero-bloody liquid in the abdomen with diffused peritonitis. Running across the abdominal cavity, from one side to the other, there was a tumor, formed by the spleen, having a quadrangular pyramidal shape with the base turned to the left side. It passed round the great curvature of the colon and pressed on the liver. This hypertrophied organ measured 87 centimeters in length, 35 at the base, and weighed 15 kilogs. and 700 grammes. Towards the lower border, the duodenum passed through it and is so squeezed that its cavity is closed. The antero-superior angle is occupied by a cavity containing two litres of pus. Sections of the organ revealed the presence of caseous and hemorrhagic places from which oozes a liquid analogous to cancerous juice. Unfortunately no microscopic examination was made to determine the nature of this growth or even the origin.—(*Ibidem.*)

ABSCESS OF STRANGLES IN THE MEDIASTINUM COMMUNICATING WITH A SUB-STERNAL PURULENT COLLECTION [*Mr. Renaud and Dr. Drouet, Army Veterinarians*].—A recently bought colt of four years had a rather severe attack of strangles. This is complicated with sub-glossal adenitis and formation of several abscesses under the throat and in the parotid region. These were treated as similar troubles are. Much reduced in flesh and weakened by his sickness, the horse at last seemed to enter in his convalescence when there appeared under the sternum in the region of the girth, a warm painful and well-defined swelling, which kept spreading, grew bigger and assumed the aspect of one following an application of mustard poultice. The horse did not seem to mind it and yet the elevation of his temperature suggested the idea of the formation of a deep abscess somewhere. Finding a soft spot fluctuating on this swelling, it was tapped with a trocar; only a few drops of pus escaped. Another puncture with the actual cautery gave grumelous pus, having peculiar odor and not looking like pus of strangles. The temperature kept going up and soon symptoms of double pleurisy made their appearance. Notwithstanding thoracentesis, the horse died four days after. In opening the thorax, there was found on the left side a large quantity of pleuritic fluid. The layers of the

pleura were covered with thick exudates. The left lung was congested. In front of the pericardium and adhering to it, there is a purulent pouch with fibrous walls, as big as a man's head and filled with pus in process of caseification. This abscess was communicating by several fistulous tracts with the sternal collection. On the right side similar lesions were found. The pericardium was normal; the heart but slightly hypertrophied.—(*Rev. Gener. Medec. Veter.*)

ITALIAN REVIEW.

By Prof. A. LIAUTARD, M.D., V.M.

THROMBOSIS OF THE AXILLARY ARTERY [*Dr. F. Quadrelli*].—A seven-year-old horse has an intermittent lameness of the left fore leg. When the horse is in the stable, he keeps it in full extension. Walking is normal. It requires a trot of 100 or 200 meters to have the lameness manifested. The horse starts free from any irregularity in his actions. At first no definite diagnosis was made and all kinds of treatment were resorted to. Later, the author noticed that the leg was apparently cooler than the other, and also that the pulsations of the collateral artery of the fetlock were more difficult to detect. He concluded that the horse had thrombosis of the axillary artery. The animal died shortly afterwards from myocarditis according to the post mortem made by another veterinarian. But Quadrelli thinks that this is an error and that there was only an hypertrophy without any inflammatory character, which was due to the difficulty in the circulation by the lesion of the axillary artery.—(*La Clin. Veter.*)

A CASE OF QUINTUPLE PREGNANCY [*Dr. Gio Batta Dalan*]. This was observed at a slaughter house where a cow had been killed. She had had an enormously distended abdomen, principally on the right side. The trouble was such that the animal could scarcely walk or stand up on her legs. The history was that she had only shown that condition since a few hours, that the cow was pregnant and expected to calve in about one month, but that fearing by her condition that she might not reach her whole time, the owner had decided to have her killed.

At the examination of the large developed uterus five calves, three males and two females, were found, varying in weight between 15 and 19 kilogrammes and altogether 79 kilogrammes. They were comparatively normally developed, living and in good condition. Taking in consideration their size, and the distended dimensions of the abdomen, it is very doubtful if the cow would have been able to reach the normal date of the end of her pregnancy without some serious and probably fatal complication.—(*La Clin. Veter.*)

CONTRIBUTION TO THE STUDY OF IMMUNIZATION AGAINST NAGANA IN DOGS [*A. Lanfranchi*].—The various attempts of immunization against trypanosomiasis have to this day been unsatisfactory, although those of Koch have shown, however, that attenuation of the virus may be better than sero-immunization. After observing that the spleen has a high trypanolytic power, the author thought that if the virus of nagana directly inoculated in splenic tissue would sustain a certain amount of attenuation, it might be possible by several passages in series to obtain a certain degree of immunity. A dog is inoculated in the spleen with 0.5 gramme of guinea pig blood rich in parasites. He dies in 104 days. An animal of control inoculated in the peritoneum dies towards the fifth day, which is about the ordinary length of time. Another dog is inoculated in the spleen with 0.5 gramme of blood from the first dog. For fourteen days the blood of this dog shows no trypanosomes. He then received under the skin 0.5 gramme of blood, rich in parasites, obtained from a witness. Eight days later there is no trypanosome yet in his blood. He is inoculated again in the peritoneum with blood rich in parasites, and it is only after fifteen days that trypanosomes are found in small number in his blood. From these experiments, it appears that: 1. The virus of nagana is attenuated by its injection in the spleen. 2. That by successive passages through the spleen of the virus thus modified, a relative immunity can be obtained in dogs against virus taken from dog or guinea pigs.—(*La Clin. Veter.*)

UPON THE VALUE OF THE ANTIADENITIC VACCINATION [*Dr. Plinio Carlo Bardelli*].—The author records the results he has obtained in five vaccinations that he has made with the vaccine prepared by the Cabinet of Bacteriology of Military Veterinary

Medicine. In the first where an outbreak of equine adenitis (strangles) has taken place among fifteen young horses, he inoculated eleven and after, without any local or general reactions on the part of the animals, he had no more trouble among them. In a second, where out of twenty-one horses, about half had intermaxillary adenitis, the remaining sound ones were inoculated and remained free from the disease. In a third and fourth instance, twenty-three animals were also vaccinated. Five of them only manifested very mild disease afterward, and in a fifth when eighteen horses having become diseased with quite a severe attack, some fourteen animals that remained were then vaccinated and escaped all trouble. The conclusions of the author are that 61 animals were submitted to this anti-adenitic vaccination and that only five after the operation presented very mild form of the disease, consequently these experiments proved that the vaccine possesses of efficacious qualities and that having given good results, it deserves to be used.—(*Il Nuovo Ercol.*)

CHONDROMA BY FOREIGN BODY IN A SWINE [*Dr. Ottorino Mancinelli*].—Consulted for a sow that had a swelling on the upper part of the right shoulder, about the size of a large orange, rather crepitating to the touch, warm and painful, a diagnosis was made of some neoformation due to traumatic cause and applications of iodo-iodurated ointment were prescribed. This treatment was followed for about a month without giving any satisfactory results and removal of the tumor was requested by the owner. The animal was cast, secured, the parts thoroughly disinfected and after careful incision of the skin, subcutaneous aponeurosis and muscles, the growth was isolated from the bone and cartilage to which it was more or less intimately attached and finally removed. The edges of the cavity were brought together and dressing with sublimate solutions prescribed. In due time, the parts healed without complications.

In the examination that was made of the tumor by incision of its mass, the scalpel arrived in the center of a cartilaginous deposit where a hard body was found. It consisted of a piece of upholsterer needle, about three inches long and very sharp at its end. It is supposed that this had dropped into the bedding of the animal, vertically and with the sharp end turned upwards, thus facilitating its entrance through the skin, and deeper when the animal laid on it.—(*Il Nuov. Ercol.*)

GERMAN REVIEW.

By JOHN P. O'LEARY, V.M.D., BUFFALO, N. Y.

CONTRIBUTION TO THE PATHOGENY AND TREATMENT OF CALVING FEVER (MILK FEVER) [*Bredo*].—The author is of the opinion that milk fever, with its train of very rapid non-febrile symptoms, paresis of the hind quarters, paralysis of the extremities, general paralysis, great prostration, insensibility, is a hypo-seroemia, that is to say, a general acute progressive anaemia with diminution of the serum of the blood (in quantity) a draining of the aqueous elements of the latter and which results from the physiological congestion of the udder and the activity of that gland at the setting in of lactation. The designation calving fever (milk fever) is, according to the opinion of the author, not well chosen as the malady is purely paralytic in form and not a feverish condition, and it appears, too, at times other than the result of parturition. When the disease attacks cows at time of calving then we ought to call it paralysis, or, better still, calving-hypo-seroemia. If it is a sequel to a severe diarrhoea, then we should name it intestinal hypo-seroemia. The appellation hypo-seroemia is better adapted to this disease because the symptoms of milk fever coincide with those of acute anaemia as they indicate an intense uterine or intra-abdominal hyperaemia. These symptoms are a weak, rapid, thready pulse, bloodless arteries, accelerated heart beat, mucous membranes slightly pallid, absence of fever, progressive weakness, twitchings, coma and death. In many cases weak fainting spells are observed in which the animal dies very suddenly. The lack of perceptible lesions at the autopsy, together with the diminution in the total quantity of blood are all facts which support the theory of the author in one accord. The physiological congestion of the udder and the consequent lactation produce a considerable diminution in the quantity of blood. In the beginning the equilibrium is re-established by the contraction of the uterus, absorption of the digestive fluids and resorption of the tissue fluids into the blood. When, however, the amount of water and moist feed is not sufficient, the symptoms of hypo-seroemia appear. Blood letting in this condition accelerates a general anaemia and aggravates the disease, as the author had already observed in many instances. In order to confirm his theory Bredo refers his readers to the following clinical observations. Hypo-seroemia

appears usually to attack good milch cows, and generally after calving, in which case the amount of serum in the blood is considerably decreased by the sudden onset of lactation. The disease, as a rule, appears more frequently among fat cows than lean ones, because the amount of blood in the former is proportionately less body weight than in the case of the latter. After a difficult birth, in which case the animals are usually sick, the disease never presents itself because such cows give very little milk and as a result of their feverish condition drink large quantities of water, while, on the other hand, fat cows which are heavy eaters and have been dry for some time before calving, and are good milkers, easily fall victims to the disease. In the case of those animals which yield a large flow of milk a sudden depletion of the watery elements of the blood takes place. It may also occur in such animals before calving when milk secretion has already set in. When thirst is aroused in those animals by the administration of medicinal agents, the disease appears gradually and less severe or perhaps not at all. When the animals are milked frequently the disease is intensified because milk secretion is increased and the serum is absorbed by the empty, milked udder. When a copious injection of a physiological salt solution is made hypodermatically or intravenously, or rectal injections of 15 to 20 litres of lukewarm, normal salt solution, the disease does not appear, or if it has already attacked the animal, a rapid recovery ensues. This is also the case when the udder is injected with solutions or gases which mechanically prevent milk secretion, because on the one hand the blood or the lymph is forced back from the surcharged udder into the general circulation and, on the other hand, through the cessation of milk secretion the blood is not robbed of its watery elements. Animals which have not yet given milk do not contract the disease, provided no other cause produces a sudden depletion of the blood serum; for instance, a severe diarrhoea following the action of a purgative, or it may be brought about by an inflammation of the bowels. It does not affect good milch cows which suffer from an inflammation of the udder, nor those which are given water to drink freely. The author now endeavors to refute the theories advanced up to the present moment concerning the etiology of milk fever, as follows:

1. Cerebral anaemia, the result of increased activity of the portal circulation (Aronsohn, Zehl, Meyer). This theory cannot be correct, for the blood which is repelled by contraction of

the uterus into the general circulation compensates a possible existing disturbance present in the circulation of the blood.

2. Cerebral anaemia as a result of a pathological hyperaemia of the udder. An inflammation of the udder is not present, if it were, the first symptoms to be observed would be a hypo or agalactia.

3. Non-infectious toxaemia which arises from a progressive auto-intoxication due to a retrogressive metabolic change in the mammary cells. If this were true the milk must also be poisonous, which is certainly not the case. Again, when milking occurs several times daily the toxic material would be removed and recovery follow much more rapidly. Clinically, this is just the very opposite, as it is the best means of accelerating the development of the disease. This theory would not explain the appearance of the malady in oxen as was reported by Frank, or in yearling bulls as the author had observed personally.

4. Formation of toxins in the udder, the enzymes, which for the most part are similar to the trypsins, the pepsins and so on (De Vries). These theories are based upon the same suppositions as the former and are set aside by the same arguments of the author.

5. Infection of the udder by anaerobic organisms, a theory which is supported upon the curing of the disease by intramammary injections of oxygen peroxide. Against this we answer that a gas, free from oxygen, injected at the proper time gives equally good results.

6. Infection from the uterus (Frocard). The conditions submitted as to a normal birth having taken place in which no injuries have resulted does not support this theory. The victims of milk fever are strong, well-nourished animals which are capable of resisting infection to a large extent, together with the fact that there is no fever present. The rapid recovery, and that without a convalescing stage after the action of air in the udder, is not observed in cases of infection. Therapy, although the preventive as well as the curative treatment should be always borne in mind. The blood circulation should be re-established to an equilibrium when interrupted. A medium-sized cow, according to Boussingault, gives off daily 33 litres of water through the skin and respiratory tract and 15 litres through the urine and excrement, besides that which is secreted in the milk. One should therefore give a cow, which had just calved, water in sufficient quantities and not milk the animal for at least 24

hours after calving. Also the stall floor should be constantly sprinkled with water in order to keep the air well saturated with moisture and minimize the evaporation of fluids from the animal economy. If the patient is not inclined to drink, the desire for liquids may be aroused by administering alkaline remedies, sodium chloride in solution, or bicarbonate of soda and so on. When the disease has already developed we should have recourse at once to intramammary infusions of air in order, by mechanical means, to drive the blood back into the general circulation. Also administer intra-uterine and intra-abdominal irrigations and subcutaneous injections.—(*Berliner Tier, Wochenschrift*, No. 21, 1910.)

DR. W. W. YARD has been appointed Aide on the Staff of General Sherman Bell, who is Grand Marshal for the Spanish War Veterans' Roosevelt Parade and Encampment at Denver, Colo., August 29, 30, and 31, 1910.

THE PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION will hold its semi-annual meeting on September 20th in the Y. M. C. A. rooms, Second and Locust streets, Harrisburg, Pa. This splendid State organization always gives those in attendance a literary feast, such as is presented at few State associations. All who can possibly do so should be present to partake of it.

TROTting IN SEPTEMBER, 1910—September 6 to 10: Hartford, Conn.; Dongan Hills, S. I.; Orangeburg, N. Y.; Hamburg, N. Y.; Rutland, Vt.; Potsdam, N. Y.; Bethlehem, Pa.; Timonium, Md.; Minneapolis, Minn.; Liberty, Ill. September 12 to 16: Syracuse, N. Y.; White Plains, N. Y.; Albion, N. Y.; Riverhead, N. Y.; Little Valley, N. Y.; Johnstown, Pa.; Brookville, Pa.; Baltimore, Md.; Wheeling, W. Va.; St. Johnsbury, Vt.; Milwaukee, Wis.; Grand Rapids, Mich. September 19 to 23: Columbus, Ohio; Mineola, N. Y.; Ogdensburg, N. Y.; Batavia, N. Y.; White River Junction, Vt.; Rockville, Conn.; Allentown, Pa.; Parkersburg, W. Va.; Detroit, Mich. September 26 to 30: Columbus, Ohio; Trenton, N. J.; Berlin, Conn.

The horse game is not yet dead!

CORRESPONDENCE.

DIVISION OF VETERINARY MEDICINE, IOWA STATE COLLEGE,
Office of The Dean, Charles H. Stange.

AMES, IOWA, August 8, 1910.

AMERICAN VETERINARY REVIEW, 509 West 152d Street, New
York City.

GENTLEMEN—On page 686 of your August number there is a report concerning the manufacture of hog cholera serum in the State of Iowa stating that it was to be furnished free to stock raisers and that it must be administered by a competent veterinarian. I am interested in this report because as experiment station veterinarian I have received numerous inquiries regarding the use of hog cholera serum, etc. It is possible that there was some mistake in this report, but at any rate it seems that it should be corrected; consequently I am enclosing a copy taken from the laws of Iowa, Thirty-third General Assembly, which I think will be self-explanatory.

Very truly yours,

C. H. STANGE.

CHAPTER 151.

ESTABLISHMENT OF LABORATORY FOR MANUFACTURE OF HOG CHOLERA SERUM.

AN ACT to establish a laboratory for the manufacture of hog cholera serum at or near Des Moines under the supervision of the state veterinary surgeon and make an appropriation therefor. (Additional to chapter fourteen (14) of title twelve (XII.) of the code, relating to state veterinary surgeon.)

Be it enacted by the General Assembly of the State of Iowa:

SECTION I. ESTABLISHMENT AUTHORIZED—ASSISTANTS—SERUM, HOW SOLD—RECEIPTS, HOW EXPENDED—APPROPRIATION. The state veterinary surgeon is hereby authorized to establish a laboratory for the manufacture of hog cholera serum, and to provide the necessary equipment therefor at or near Des Moines, Iowa. The state veterinary surgeon shall be director of said laboratory. He shall employ such assistants as he may deem necessary to carry on said work. The director of the laboratory with the approval of the executive council shall fix the salaries of the employees connected with the manufacture of said serum. Upon application made to the director of the laboratory, he shall furnish said serum for use within the state of Iowa at actual cost of manufacture, and shall also furnish applicants with instructions for the use of same. If said applicant should require the services

of the state veterinary surgeon or his assistants, the expenses for their services rendered shall be paid by the applicant to the director of the laboratory or his authorized assistant. The receipts from the sale of serum and from salvage shall be used by the director of the laboratory to promote the work, and he shall file with the executive council a separate official and itemized statement of all such receipts and expenditures in lieu of turning such receipts into the state treasury, as provided in section one hundred seventy-d (170-d) of the supplement of the code, 1907. The director of the laboratory shall issue receipts for all moneys received by him and shall annually file with the executive council a complete statement of all moneys received by him or expended in the equipping and conducting of said business. Upon passage and publication of this act there shall be made immediately available an appropriation out of any moneys in the state treasury not otherwise appropriated, the sum of eight thousand dollars (\$8,000) or so much thereof as may be necessary to carry out the provisions of this act. The amount above mentioned shall be paid upon the order of the director of the laboratory upon approval by the executive council.

Approved April 12, A. D. 1909.

OBITUARY.

T. G. DUFF, V.S.

Dr. T. G. Duff died at his home, St. Louis, Mich., on April 28, last, in his fifty-second year, after a second stroke of paralysis, both strokes having occurred within a month. Dr. Duff was a Canadian, having been born at Clover Hill, Ontario, in 1858. He graduated from the Ontario Veterinary College in 1885, and, after practising for a short time at Kincardin, where he met and married Miss Lizzie Crawford, he located in the city in which he died. He had a large circle of friends and enjoyed a good practice. He was an earnest and faithful member of the Michigan State Veterinary Medical Association, and was its representative at the A. V. M. A. in Chicago last September. He is survived by a widow, two daughters, a sister and two brothers—one of the latter being the Hon. J. S. Duff, Minister of Agriculture, Province of Ontario; the other, R. A. Duff, a resident of Cookstown, Ontario.

DR. CHARLES WARRENER.

We regret to learn through his sister that Dr. Charles Warren, of Portsmouth, Ohio, died on March 23, last. The doctor's many friends deplore his loss from their midst.

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